MAR 1996

Britain's favourite Personal Computer magazine

FAKE CACHE SCANDAL P19

Personal Computer World

# Personal Computer World

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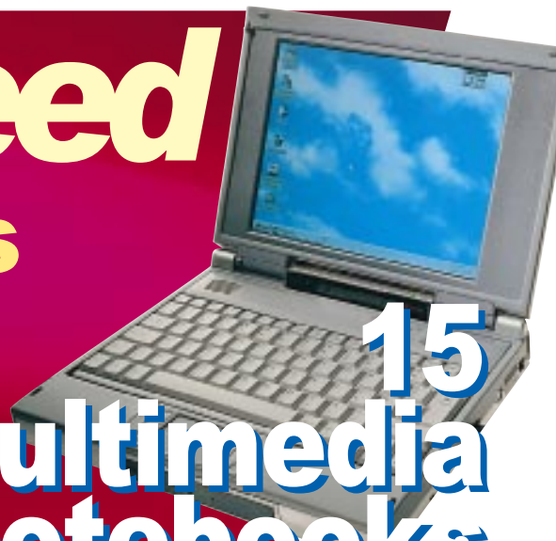
VNU Business Publications

WIN a DAN 133MHz Pentium p149

150MHz Pentium PCs ● Multimedia notebook group test ● Hard Disk upgrades ● MS Office 95 ● SmartSuite 95 ● 16 Personal Information Managers tested ● Mini document scanners

## Built for Speed

## 150MHz Pentiums on test



## 15 multimedia notebooks

Colour, sound and CD-ROM

## Hard disk upgrades

£100 a gigabyte?

## Suite Talk

Office 95 v SmartSuite 95

IF YOUR CD-ROM AND 3.5" DISK ARE MISSING ASK YOUR NEWSAGENT

## 16 Personal Information Managers

VNU LABS EUROPEAN EUROPEAN EUROPEAN EUROPEAN

ALL HARDWARE TESTED BY THE VNU LABS

VOL19 NO3

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### CUTTING EDGE



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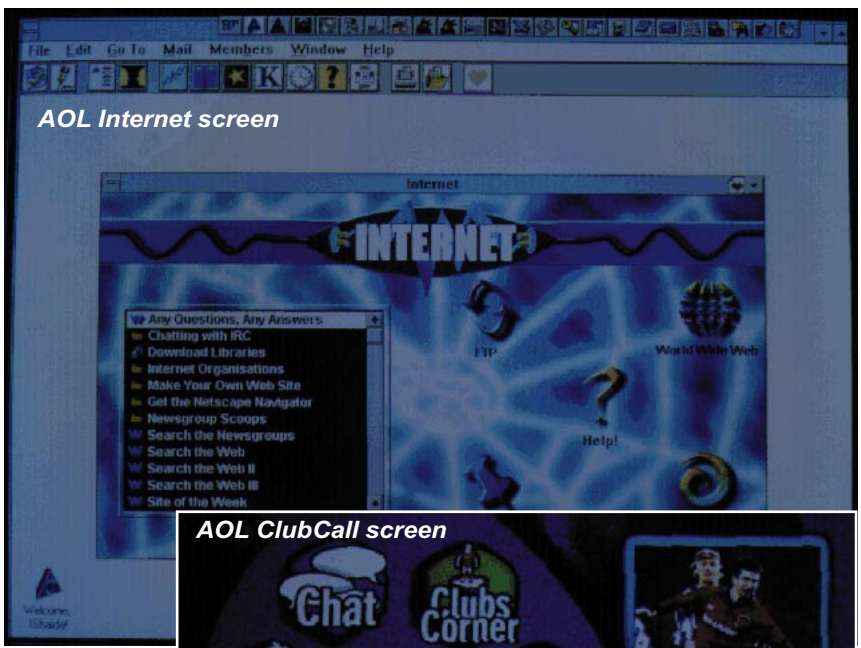
# PCW Cover Disk

# America OnLine

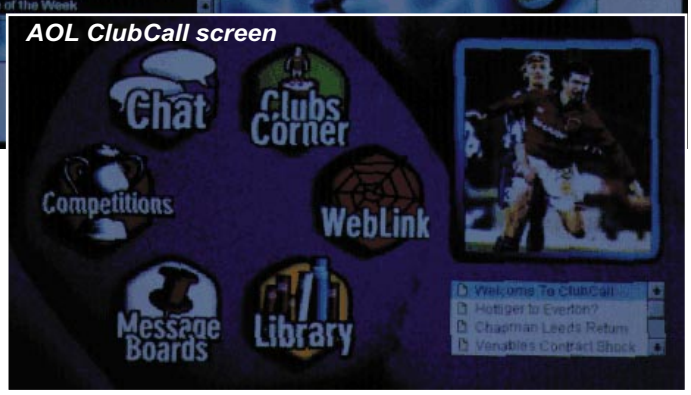
AOL is aiming to become the UK's biggest service provider. Its successful US service already has more than 4.5 million users. Armed with a suitable modem and a PC running Windows 3.1 or later, this month's cover disk contains all you need to connect for one month's free subscription including10 hours free access to AOL's range of easy to use, informative and useful services. Thereafter if you wish to become a member of AOL the monthly charge is £5.95 including five free hours. Additional hours charged at £1.85.

Unlike rival CompuServe, AOL charges a flat rate for all its services.

At its launch in mid-January, AOL had 65 percent geographical coverage for local call access which will move up to 100 percent in April. AOL has a highly graphical, lively user interface which makes other online services look positively staid.




*AOL Internet screen*




*AOL ClubCall screen*

## CONTENT

**AOL**'s content is produced specially for a UK audience

### Computing

A number of UK computer magazines including *Personal Computer World* will have dedicated areas on AOL. *PCW*'s area, due to launch in April, will include a discussion forum, a software library, full-text of articles and a hot-link straight to our World Wide Web site.

### Sport

For sport, Clubcall, the telephone information service, is putting together a sports area focusing on football, rugby union and cricket.

### Digital cities

AOL is planning a series of electronic guides to what's on and where to go, and is launching with Digital City London, which includes searchable guides and listings from *Time Out*.

### News

PA News is supplying a news feed carrying up to 1000 reports and updates daily.

### Weather

Highly graphical local weather forecasts. Members can focus in on more than 80 inland and coastal regions for forecasts and extra information like tide tables and sunrise and sunset times.

### Road Travel

Access to AA RoadWatch which is updated every 30 minutes

**There will be full access to the US, German and French (French service to be launched in Q1 1996) services. No surchages apply.**

### IMPORTANT

- To install the software run a:\setup.exe from Windows.
- If you have problems with the cover disk such as the "cannot read from drive A:" error, call AOL on 0800 3765432 for a free replacement.
- For free technical support, call AOL on freephone 0800 2797444.

# PCW Interactive CD-ROM

**Welcome to another software roller coaster from the infamous annals of the *PCW* Interactive CD-ROM.**

## MAIN FEATURES

**Demos**

The cutting edge of new software awaits your pleasure. This month, the *PCW* Interactive CD-ROM includes the multimedia epic, Ripper; a full-screen video with a host of Hollywood stars eager to appear on a PC near you.

In a surprise move, the makers of Wing Commander 3 have named the sequel Wing Commander 4. So chocks away, ready for this all-new legendary simulator.

Internet addicts will be delighted to see their online bills wrestled to the ground and given a damn good

**Linux**

**The version of Linux included on our February CD-ROM was out of date. We will include an up-to-date version on our April CD.**

M A R C H 1 9 9 6

## PCW INTERACTIVE: Entire Contents List


Personal Computer World

### FEATURES

**Wild Bites** — Super soundbites
**Realimation** — Stonking space time editor for 3D data

### MAGAZINE

The essential back-up to *PCW*'s illuminating articles and features: including ClipMate, a clipboard enhancement with the exclusive new PowerPaste feature

### WIN 3.1

**Accordion Solitaire** — Animated squeeze-box antics
**Alternate Solitaire** — Different
**Noteworthy Composer** — Write down your own music
**Vid Fun** — Multimedia file editor
**Sys Win** — System File manager

### WIN 95

**Website** — Create your own, and how!

### DOS

**Superchase** — Slovakian software
**Ink Utils** — 11 essential DOS utilities
**Turoid** — Breakout for smoothies

### EXTRAS

**ClipArt** — 50-plus visual banquets from the Cybernetic Image Sampler
**PolyGram MPEG Sampler** — Over 25 minutes of hit music videos

C O N T I N U E S O V E R

F O L D H E R E

**Money Smith 95** — The perfect companion for your money
**Animated Cursors** — Shun your static pointy thing

### MACINTOSH

Mac fans everywhere will yell with delight at our avalanche of Apple-based action

**Mac Doom** — At last, get your hands on that PC leviathan, Doom
**Full Throttle Trailer** — High-speed cutting edge games thriller
**Amazon Trail** — A rumble in the jungle
**Bach Man** — …Turner Overdrive game?
**Blackjack Deluxe** — who needs Black-jack Bargain Basement now?
**Kids Clicks** — Perfect for the kiddies in your life
**Learn the Art of Magic** — Paul Daniels, watch your back
**Mac Pipes** — Ready-rubbed or flake?
**Mac Sokoban** — Strategy head-scratcher
**Marvin the Ape** — You could go bananas

● **Minimum requirements:** 4Mb free RAM (some can be in a permanent swapfile), 386SX/33 processor, Windows 3.1. Users with less than this should be able to run all the DOS programs on the CD-ROM directly from DOS or Windows (rather than using the front-end). For best performance we recommend: 8Mb installed RAM, 486 DX/50 processor, Windows 3.11 or Windows 95

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thrashing, with the addition of Secret Agent to their collections. Meanwhile, crash-landing in an unearthly hamlet full of over-emotional villagers is an alien experience to all those of us who don't watch Emmerdale on TV. But rather than saving mankind's sanity by wiping out the villagers, you must save them from an alien uglier than Seth Armstrong in a gurning competition.

### Digital video

Not only, but also… the PolyGram MPEG Sampler brings you over 25 minutes of music from top artistes. To play the videos you need an MPEG player. If you have an MPEG graphics card, you can just click on the play button in PCWI to play the movie. If you don't, you can still get a feel for the video using the VMPEG software player, also on the CD. Just install it and press the play button. But remember, a software player will only be as good as your PC — the slower it is, the more video frames and audio will be skipped. Owners of Pentium 133s should find the video plays quite well, though.

### Features

Renowned voice-over artiste and radio DJ, Marc Silk, brings you a steaming selection of soundbites to spice up your life. You could indefinitely loop them and play them at 600W in your garden, just to annoy the neighbours.

### DOS

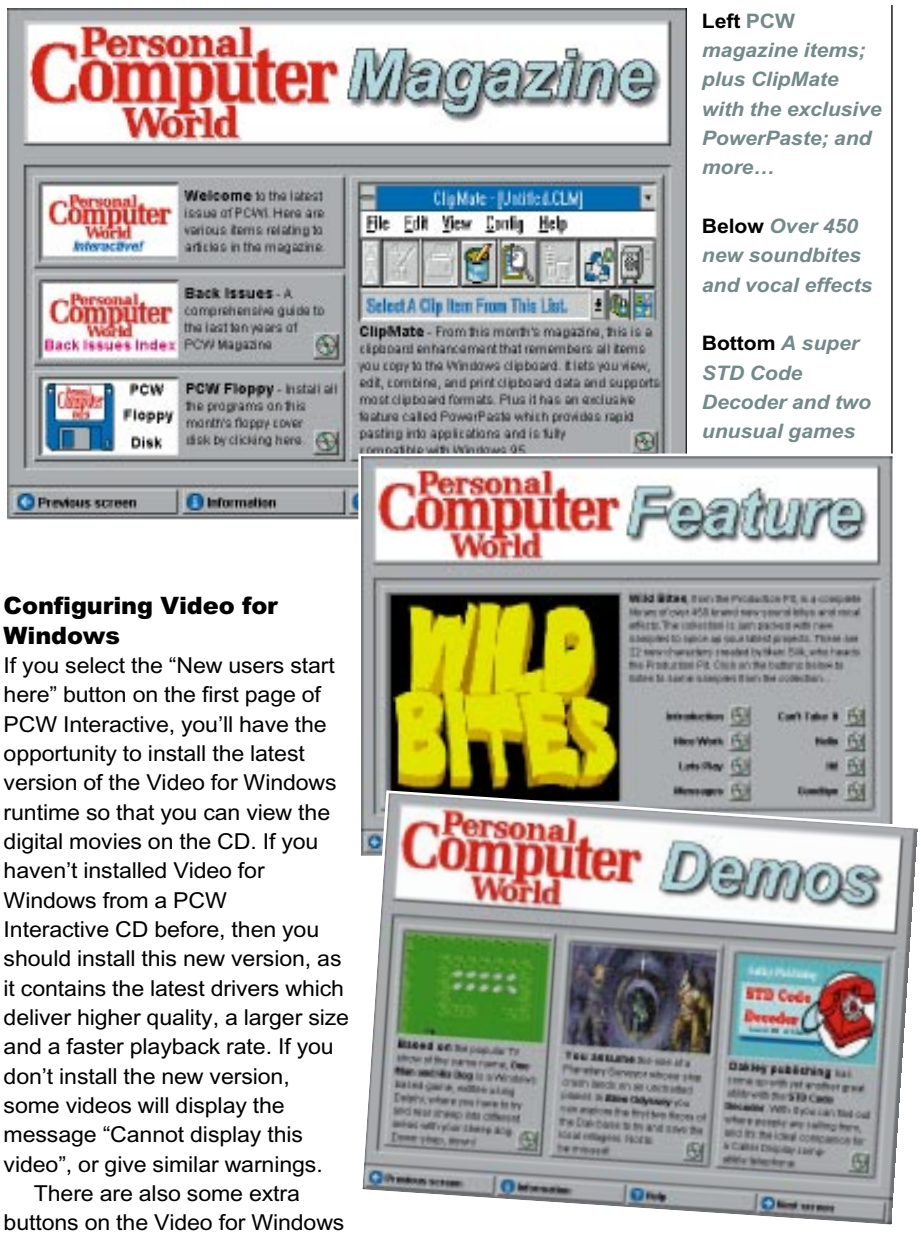
Headlining this month is Superchase — Czech out this superb Slovakian car-based brand of hi-jinks. East European software mogul, Igor Kracun, took one and a half years to complete this logic test. So the full version is likely to cost you more than just a pair of Levis and a bottle of Bud.

### Win 95

Those of you resplendently equipped with last year's version of Windows will vibrate with delight while transforming your static pointy cursor into, perhaps, an animated Pamela Anderson or Keanu Reeves. There's also an invaluable Web site designer that will get you online in no time, no bother.

### Win 3.1

A Solitaire-fest beyond comparison to fritter away the time you spend at work. Plus, there's Money Smith, the ideal companion for your dosh.




**Left** PCW *magazine items; plus ClipMate with the exclusive PowerPaste; and more…*

**Below** *Over 450 new soundbites and vocal effects*

**Bottom** *A super STD Code Decoder and two unusual games*

### Configuring Video for Windows

If you select the "New users start here" button on the first page of PCW Interactive, you'll have the opportunity to install the latest version of the Video for Windows runtime so that you can view the digital movies on the CD. If you haven't installed Video for Windows from a PCW Interactive CD before, then you should install this new version, as it contains the latest drivers which deliver higher quality, a larger size and a faster playback rate. If you don't install the new version, some videos will display the message "Cannot display this video", or give similar warnings.

There are also some extra buttons on the Video for Windows page, which allow you to fine-tune your PC's performance without having to leave PCW Interactive or restart Windows. In particular, you can choose to have digital movies played back on your PC at full-screen resolution. That's right, without having recourse to hardware add-ons such as MPEG cards, you can have full-screen digital videos when you run the PCW Interactive CD-ROM.

But please remember when you exit from PCW Interactive; if you leave the option for full-screen video selected, then all video in other applications will also be full-screen. If you don't want this, then re-run PCW interactive and select the "Windowed" option and quit again.

### Testing your CD-ROM

If you suspect your CD-ROM may actually be faulty or damaged, you can run the file CDTEST.EXE in the SYSTEM directory of the CD-ROM. The program will then examine every byte of data in the PC partition of the disc to see if it can be correctly read.

The process takes up to 35 minutes and generates a verification code if the disc passes the test. If the CD-ROM fails this test, try cleaning it with a light solution of washing-up liquid and dry it with a lint-free cloth then run the test again. If it still fails, return your CD-ROM to the magazine for a free replacement.

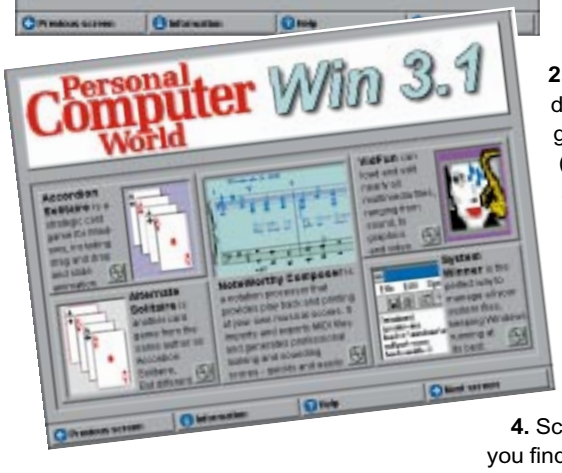
You are free to copy the CDTEST.EXE program to your hard disk in order to test other CD-ROMs as long as it is not distributed in any way. If you are running CDTEST from your hard drive, you need to specify the CD-ROM drive to test, as follows:

CONTINUED

**Right** *GPSS, Image AXS and Jigsoft: find yourself, manipulate a picture and then make a jigsaw of it*

**Below** *Leisure, music score processor, system file and multimedia utility demos*






graphic display driver may not be entirely 100 percent Microsoft compatible. The answer is therefore to install one of Microsoft's own drivers, as follows (but NOT if you are using Windows 95, as the drivers supplied with it are even newer than the ones on this disc):

**1.** Run Windows Setup from File Manager, then select Options followed by Change System Settings.

**2.** Scroll through the list of displayed graphic drivers until you get to the final entry: Other Display (Requires Disk from OEM), and select it.

**3.** Insert this month's CD-ROM into the drive and replace the A:\ prompt with D:\SYSTEM\SVGA256 (changing the D: to the correct letter if your CD-ROM is not in drive D:), then press Return.

**4.** Scroll through the new drivers until you find the ones beginning Super VGA… then select the one for the resolution you prefer. The driver will then be installed and Windows restarted. PCWI and Video for Windows should then have no further problems.

If this works (which it should in 95 percent of cases) you may wish to contact the supplier of your graphic card to see if they have an updated graphic driver. If Microsoft's drivers don't work you will need to contact your graphic card supplier anyway.

### If Video for Windows install fails

If the Video for Windows installation fails and you receive an error such as "XXXXXXXX.YYY cannot be updated as it is a shared file". The answer is to delete the file XXXXXXXX.YYY (or whatever it is called) and reinstall Video for Windows.

### PCWI is slow to load or runs slowly

You need at least 4Mb of RAM free to use PCWI. If necessary, you can obtain this by creating a permanent swap file of up to 4Mb. You are also advised to enable read cacheing of your CD-ROM by adding its name to the SMARTDRV line in your AUTOEXEC.BAT file. You should also allow MSCDEX to set up its own buffers by adding a line such as /M:10 to the MSCDEX line, also in your AUTOEXEC.BAT file. Please refer to your manuals for full details.

### Windows NT and OS/2

Macromedia Director, the program used to create PCWI, is incompatible with Windows NT. However, you should be able to run PCWI from OS/2 simply by calling up PCWI.EXE from the command line.

### CDTEST D:

Note: We offer this tool "As is" purely as an aid to diagnosing possible faults, some of which may occur because an older version of MSCDEX.EXE is in use. This is not because of a faulty CD-ROM, and we disclaim any responsibility for any erroneous error reports that it may generate.

### IMPORTANT — READ THIS! GENERAL PROTECTION FAULTS

If you receive General Protection Faults when running PCWI or playing any digital videos, it is probably because your

## PCW *Advice & Contacts*

The *PCW* CD-ROM is virus-checked at every stage of production. However, *PCW* will not accept liability for any problems arising from its use. You are advised not to install software on a networked PC before checking the disc.

For technical support on the CD-ROM and the programs on it, call the VNU 24-hour Hotline on 0891 616444. This is a computerised touch-tone advice system providing hints and tips on a wide range of topics. It also offers you the opportunity to speak to a member of our technical support staff during office hours by pressing the 0 key on your keypad. Calls cost 39p per minute off-peak and 49p at all other times (tone phones only).

Using the computerised system you can access the information you need very quickly. If you request to speak to a member of our technical support staff and we cannot answer your question immediately, we will offer to call you back at our expense. Outside office hours you can leave us a message by pressing the 9 key. If you leave your phone number, we'll call you back at the earliest opportunity during office hours.

If you prefer, you can email rnixon@cix.compulink.co.uk, or on CompuServe: 70007,5547, or write to us at the magazine.

# Personal Computer World

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# Editorial

The multimedia notebooks in our round-up (page 102) represent the current state of the art, sporting fast, colour TFT screens, built-in sound and CD-ROM drives and the kind of hard-disk capacity desktop PC users would have sold their grandmothers for five years ago.

What's remained curiously static in the midst of all this progress is battery life. The Enact 5400 manages a laughable 30 minutes without adding an extra battery pack. The norm sits ponderously between two and three hours. *PCW* reader Steward Boyle is understandably annoyed about this development which is tough on users who do real work with notebooks, "rather than pose on business-class flights".

The move to multimedia has also kicked up prices. A decent mono 486 notebook could be had for under £1,500 two years ago. Today's colour multimedia Pentiums typically cost around £3,000. Boyle's request for an "affordable, high-performing machine with decent battery life" seems reasonable, but isn't being tackled by manufacturers. The wholesale move to colour hasn't helped. Colour, seductive and great for presentations, adds a lot of cost and power consumption to a notebook. But a flick through the *PCW* ads reveals that the only brand-name mono notebooks still available are old models saddled with sluggish processors.

● Home and business PCs have crossed over. The typical computer bought for the home is more powerful and has more features than its business equivalent. It's often home user enthusiasts who are buying 150MHz Pentiums with 32-bit sound cards (see cover story, page 133) while business users make do with chips running at half the speed. Dell, whose customer base is heavily biased towards businesses, says that 75MHz Pentiums are its biggest-selling item. Applications like programming and CAD will always demand the fastest hardware available, but today's power users are probably sitting on a sofa rather than behind a desk.

**Ben Tisdall**
**Editor**

## Next Montl.

Personal Computer World

## PDAs: Toys for the boys

or the portable computers of the future?

## Improve your PC's audio Sound Cards

## DTP Software clash of the titans

Cyrix M1 vs Pentium Pro

## Page Layout applications compared

**April 96 issue**
— On sale Thursday 8th March

**May 96 issue**
— On sale Thursday 7th April
• *100MHz Pentiums*
• *Image editing software*

PCW

# Newsprint

## Scandal of fake cache memory

Motherboards with fake cache RAM are on sale in Britain, a *Personal Computer World* investigation has revealed.

We paid £99 (£116.33 inc VAT) for one on London's Tottenham Court Road, where computer stores draw buyers from all over the world. Genuine cache would account for nearly half that price.

And we found an identical board with fake cache on a PC supplied for review by Watford Electronics – proof at least that it knew nothing of the fakes.

We saw at least two other suspicious boards on sale in Tottenham Court Road, though most looked genuine.

Our board, called a Terminator SMT486/5x86, claimed to have 256Kb of cache RAM. Tests by Chris Bakolas, technical manager at North London PC vendor Dan Technology, showed that the four cache chips were fake *(see caption, right)*.

A reader bought a similar board at a computer fair for £55.

Both boards functioned well when equipped with genuine chips, but were 40 percent slower with the fakes. The BIOS (core logic which posts the first screen messages you get when you switch on) on both had been fixed to report "256K w/b" cache even with the chip taken out.

Stories about fakes have been circulating for months and examples have been found on the continent; but these were the first we had seen in Britain.

People who buy motherboards to upgrade or build a PC will not necessarily spot fake cache because the machine will function, though relatively slowly.

Anjum Sabir, manager of PC Deals, which sold us the board, said when told of the fake chips: "This is a surprise to me."

He said he had bought the board for "a fairly good price" from a regular supplier, which he refused to name. He had not checked the board. " If they say it has 256K cache we take their word for it. It is a matter of trust."

Sabir said he would withdraw the boards from sale.

Dilip Ladwa, technical manager at Watford Electronics, said of the fakes: "This is most disappointing. I shall look into it."

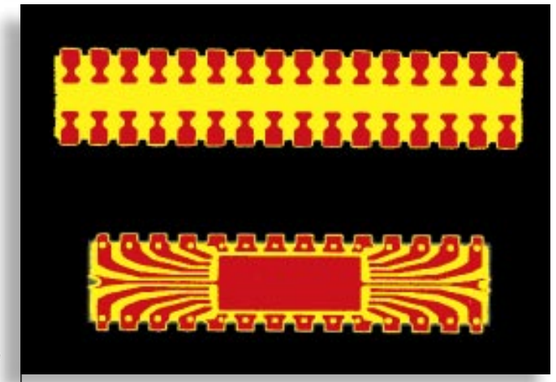
It seems likely the faking was done outside Britain, though we suspect one shop (not named here) has consciously sold fakes.

The Award BIOS had been fixed to lie about the cache. Award traced the serial number to SMT, of Taiwan, and said the label seemed genuine. This does not mean that SMT fixed the BIOS. We could not contact the company at press time.

Police and the Camden trading standards office are investigating. A Camden spokeswoman said: "If anyone has experienced problems in this area, please contact us on 0171 413 6917."

Buyers should be able to claim from the suppliers.

**Clive Akass**



*Spot the difference... the lower chip in this false-colour X-ray is genuine, with the internal connections and silicon clearly visible. Above is a fake: the exterior tags have no internal connections.*

*The X-ray was the final stage of our tests. First, Chris Bakolas at Dan ran a speed test with the chips in and out. There was no significant difference in the results. With real chips in, the speed increased 41.7 percent. With the fake chips back, a program called PCCheckit reported there was no cache present; however, the BIOS claimed there was 256Kb W/B (writeback).*

*Back at VNU we got this same message with the jumpers set for various cache levels. A meter between the line and ground pins read open circuit — not surprisingly, because as the X-ray shows, the chip is solid plastic.*

### What is a cache?

Cache holds data ready for the processor to avoid delays in delivery from slow RAM. It uses Static RAM chips which do not need a refresh strobe like ordinary memory and are faster.

The main processor has internal cache, so the S-RAM chips are called secondary or Level 2 cache.

The simplest strategy for using it is to write data to the cache and RAM at the same time. Faster but more difficult is a strategy called Writeback, where data goes only to the cache in the first instance. Some fake cache are marked "writeback".

### Is your S-RAM for real?

A quick test is to compare speeds with the cache enabled and disabled. You can disable the cache via the CMOS Setup — a message on how to do this appears when you switch on. We have posted a suitable test program, with an update on this story, at http://www.vnu.co.uk/ln.

You could also try any of our other tests (see caption above). Our fakes were marked SI-6C512P-15. If your cache is fake, or you have genuine chips marked with this, please fax us details on 0171 316 9313 or email me at clive_akass@pcw.ccmail.compuserve.com.

Chips marked Writeback are likely to be fake. The writeback functions (see left) are implemented by the processor and support chips, not the S-RAM itself.

"I think people mark the chips writeback because it sounds impressive," said Chris Hogg, Intel UK's architecture manager.

**Clive Akass**



## Sugar prunes company that launched Britain's PC boom

Amstrad is scaling down its Consumer Electronics (ACE) arm following the sudden departure of chief executive David Rogers, which sent shares dipping 10 percent.

ACE played a big part in kick-starting the PC boom in Britain during the eighties when it bought out the PC 1512, with a then unimaginably luxurious 20Mb of hard disk space, for less than £1000. Even more successful was its sub-£300 PCW word-processing package, which seduced many non-techies into using computers for the first time though it was not high on ease of use.

This may be why a survey last year found that Amstrad was second only to IBM and Apple as the computer company best known to Britons.

Amstrad is just back into profit after posting losses for three years; only six years ago it claimed nearly a quarter of the European computer market.

Chairman Alan Sugar announced a new version of the word-processing package at the end of last year. The company stresses that it is not getting out of the computer business, and its direct-selling arm Amstrad Direct will continue as before; so will PC vendor Viglen, which Amstrad bought last year.

But Amstrad has a new focus, buying into the comms business by purchasing Danish mobile phone specialist Dancall and UK modem maker Dataflex. A company insider said of the retrenchment at ACE: "Frankly, the organisation was rather too large for the business we were doing."

Amstrad 01277 228888

This combined desktop screen and keypad from Source Development is claimed to provide the most natural possible working position. The touch-sensitive surface can be used to control a PC. A Mac version will be available soon. It costs about £2000.

Details on 0171 235 5330

## Solomon divides virus firm

S&S, the company founded by Dr Alan Solomon to develop and sell his anti-virus toolkit, has been bought out by three of its directors.

The company's data recovery arm, Authentec, has been hived off under the amicable deal and will continue to trade under the direction of Dr Solomon's wife, Susan.

Dr Solomon will continue as a consultant and director, and as general cheerleader for S&S at computer shows, where he is well known for his uninhibited fancy-dress demonstrations.

"There will be very little difference as far as customers and users are concerned," he said.

He said the management buyout came about because he wanted to diversify his interests. "My wife and I had all our eggs in one basket. We wanted to do other things." Dr Solomon said he would continue his interest in viruses and hoped to do more writing.

Sales director Geoff Leary, production manager Keith Perrett, and financial director David Stephens will buy all S&S shares under the terms of the deal.

S&S 01296 318700

### CARTOON


***"Your baby's due in May, Mrs Gates. But given your husband's record, the date could slip to the third quarter."***

**Baby Gates**

Microsoft chairman Bill Gates and his wife Melinda French are expecting a baby in May. They wed in early 1994.

### Short Stories

#### *Quest on CD*

● Devotees of Monty Python can rest in peace with the knowledge that a CD game version of the Quest for the Holy Grail is due out in early autumn. It contains footage from the film as well as new illustrations and animation.

**Joanna Scott**

7th Level 01932 355666

#### Lotus takes Notes cheaper

● Lotus has cut the price of the client software in its information-sharing product, Notes, in the face of an expected ramp-up of Microsoft's rival product, Exchange.

The cuts come as users await the release of Notes 4.0, which should be in the shops by the time you read this. The package includes Web Navigator, a browser for Web access.

This will link with a new £38 Notes Mail client to provide facilities such as the ability to send messages containing live hypertext links.

The price of a single-user licence for Notes Desktop drops 58 percent to £111. Server software, currently £198 for any number of processors, goes up to £341, with multi-processor systems up to £1584.

Lotus 01784 455445

#### Butterfly flutterby

● IBM is reported to have dropped its novel Butterfly ThinkPad subnotebook, so called because its keyboard opens out like wings. The reason is to make way for new ThinkPads with wider screens, though the popular Butterfly format may be readopted for later models.

# Yours for just £3,300... a program that picks winners

Do you believe a computer program could be a good racing tipster? And would you pay £3,300 to try it out? If so, then a company called Comstrad would be happy to hear from you. But don't all rush at once, because it says it will sell only 500 copies (for a mere £1,650,000).

*PCW* got involved when a reader asked us to check out the scheme, advertised in a mail shot. Comstrad occupies what seems like an entire floor in the heart of London's exclusive St James's. An affable salesman explained the deal. You pay £3,300, for which you get a program disk and a guarantee that you will not lose in the first three months so long as you follow the rules.

These are that you start with a £500 stake pool and back only the three biggest-money races on a Saturday. Each bet must be exactly five percent of your remaining pool.

At the end of each of the first three months, Comstrad promises to top up your stake pool to £500 if you are down. In the worst case of every horse losing, Comstrad would thus pay back £810.54p, leaving it still with £2,500 of your money.

The DOS-based program appears to do little but produce a score for each horse on simple algorithms using form gleaned from *The Racing Post*. It is likely to come up with some winners, given that this is what such information is for.

Punters have to fill in a form for each of the three races, a laborious task when there might be 20 or more runners.

These is no database, no means of saving a horse's record, no means of accessing online information, and at one point users are expected to add up winnings themselves.

The program is more or less redundant for the first three months, as users are advised to ring Comstrad to check that they have picked the right horses. "If you are pushed for time, you can simply ask for the selections," the salesman said.

A chart shows how £10,000 working capital can be built up in three months, with the punter drawing £51,598 income over a year.

The whole scheme seems to be a variation on the betting systems advertised in the back pages of racier papers.

Comstrad programmer Colin French denied that it was priced and packaged for suckers. "The main reason for the high price is the low number we are selling. If you put more than 500 people on it, they will start moving the odds on the horses."

His salesman was at pains to say the program is not infallible. "Horses are horses, not computers. If we could predict the results every time, we would not be here trying to sell the program," he said.

Quite.

**Clive Akass**

Comstrad 0171 878 8000

# You too could be a video producer

PC and Mac users have yet to wake up to the possibilities of the latest advances in digital video, according to the organisers of the Hamburg International Short Film Festival.

The ability to edit and enhance video is becoming affordable for many more people with the advent of cheaper software and Pentium power, and short video sequences targeted at desktop computers are commonplace.

Yet it is "almost impossible to find anything visually new, other than the more or less perfect translation from analogue to the digital format," the organisers say.

They have set up a new section within the festival for digital videos no longer than 20 minutes which "demonstrate the artistic possibilities of the new medium". Closing date for entries is 1 April. Phone +49 40 430 7570 (Germany) for details.


***Fast's new F60 board provides entry-level video-editing facilities on a PC for £349. Features include effects, titles, graphics, animation and output to video tape.***

FAST 0181 968 0411

## Short Stories

### M1 board

● Flashpoint is selling a PC motherboard using Cyrix's new 6x86 processor, formerly known as the M1, with three free PCI and five ISA slots.

Flashpoint 01753 538715

### MIPs power for desktops

● A new generation of low-cost desktop graphics workstations is promised by the release of a new processor from MIPS.

The 64-bit R5000 RISC chip is said to be up to three times as fast as the Pentium or PowerPC 604 chips when running 3D visualisation applications. The first version will run at 200MHz and cost $300 in bulk.

Chips from MIPS run the graphics workstations produced by sister company Silicon Graphics. The first R5000 systems are expected to be available early this year, targeted at CAD and Web server applications.

### 95 protection

● Touchstone Software has released PC-cillin 95, a £49 Windows 95 anti-virus package which claims to monitor every possible danger source including email attachments and automatically downloads updates from a Web site.

Touchstone 01442 862612

### Proper names

● Compuserve has introduced name-based email addresses to complement its old number system. Enter Go Register to register your new handle.

# Tim Bajarin at CES in Las Vegas

## Short Stories

### Party line

● A London Labour councillor is using the Internet to enhance his prospects of being selected as Parliamentary candidate.

Claiming his use of the Web as a UK first, Cllr Evan M Jones says that the practice is now common among US primary candidates.

His site contains endorsements from colleagues on Waltham Forest council and a full CV, although surprisingly no link to the Labour Party's own home page.

A Welsh language version is also available. Cllr Jones believes the use of Web sites by prospective candidates is likely to increase. The address is http://www.point2.co.uk/evanparl1.htm.

**Paul Fisher**

### Cable threat to ISDN

● ISDN service providers could lose business to cable companies offering speeds of 4Mbps, according to a report from US analyst Forrester.

It says that ISDN, offering a basic 64Kbps in Britain, is leading the way to higher bandwidths but is "priced too high."

This, and the complexity of ISDN services on offer, "will cause ISDN's appeal to decline as it falls into the shadow of cable modems."

The conclusions refer to the US, but BT has come under heavy fire for its £400 sign-on charge for ISDN (see News, January). Cable Online is experimenting with fast home links in the UK.

### TV converter

● Vine Micro's new £399.95 DeltaScan Pro plugs into the video output of a PC or PowerMac and converts signals up to a resolution of 1600 x 1200 for use on a TV or video recorder. It supports composite video, S-Video, and RGB output for either PAL or NTSC.

Vine 01843 225714

# Console vendors retreat as the PC scores in video games market

The biggest surprise of this CES was the fact that no game-console vendors attended. In the past, Nintendo, Sega, 3DO and Atari made this their main showcase each year, using it to launch almost all of their new systems and taking up an entire hall.

This year, game vendors have decided to go to E3, the big interactive entertainment show held in Los Angeles in May, skipping Winter CES altogether. But, the move reflects the fact that the dedicated game market is in serious decline, with many of the sales for interactive entertainment systems going to the PC makers.

Indeed, IBM, Compaq, Apple, HP and Packard Bell took the space of Nintendo, Sega and 3DO and used CES to make a major statement about their commitment to the home market.

Compaq, which had one of the largest booths at CES, announced a joint venture with toy giant Fisher-Price involving two new peripherals aimed at young children.

The Wonder Tools Cruiser is a driving console with CD-ROM software that makes the PC fun and easy to use. It comes complete with steering wheel, throttle, horn, and "radio stations" and allows kids to navigate through software adventures.

They can interact with fascinating characters, unscramble alphabet picture puzzles, sort through a spaceship scrap yard and even invent and assemble toys. It will be available in the US this summer at $159.

The second product for kids, the Wonder Tools keyboard, has a finger mouse and works with all standard PCs. It does everything a standard keyboard does but is designed specifically to allow pre-school children to interact with a home PC.

It has oversized keys, with special function buttons for quick and easy ways to snap a picture of a scene, get help from characters, and get to the home screen and exit the program. It will be priced at $129.

The products are unlikely to arrive in Britain quickly because of the need to localise the software.

# At last... it's the scanning keyboard

Small document scanners designed to fit behind keyboards have been a big success over the past few months, so it was only a matter of time before someone would go one stage further and integrate a scanner into the keyboard itself.

Compaq has done just that. The scanner is just above the keys and as you slide the paper through the feeder, it automatically puts a digital view on the screen.

Compaq also showed a home-automation system which uses a Presario PC to control lights, alarms and anything electrical.

Compaq's exhibit was impressive and it represented a commitment from them as well as the other PC vendors in attendance that they are going to be major players in the home consumer market in the future.


Polaroid has come up with an easy-to-use colour scanner for just $299, which means that it will have a street price of around $269.

The PhotoPad, launched at CES, allows you to scan pictures up to 6in x 4in directly into your PC via the parallel port.

MOTOROLA

## The mini is back in fashion

Perhaps the most eye-catching product at CES was a new cellular phone introduced by Motorola called the StarTAC.

It is the smallest cellphone on the market, being about the size of an alphanumeric pager and weighing just 3.1 ounces.

You could even clip it onto a belt or sweater and wear it like a pager. It will retail for around $1000.

# DVD drives slow to arrive as developers wonder what to do with the 18Gb CD

Low-cost video-CD players using the new high-density Digital Video Disc format will be out this year — but you will have to wait until 1997 for DVD-ROM drives on PCs.

The roll-out dates for DVD was the most important announcement at the Winter Consumer Electronics Show in Las Vegas, which is one of the most enjoyable events I cover each year. The 1996 show drew 80,000 people all keen to take a peek at all the newest consumer PCs and electronic gadgets.

The DVD format, defining the next-generation CD-ROMs, is the result of a deal between more than 20 vendors to create a single high-density standard for both PCs and consumer electronics.

It allows software developers and movie makers to lay down as much as 18Gb on a single dual-sided, dual -layer disk the exact same dimensions as today's 648Mb CD-ROMs.

Most vendors promised to release at least the first version of their DVD players next autumn, targeted at the consumer market. These will be used to play digitally compressed movies over a TV.

Emille Patrone, a vice-president at Phillips, said there should be at least 200 movies digitised in the DVD format by Christmas, though the figure could be as high as 500 if things go well. This upper target is unlikely to be reached because it takes as much as a week to digitise a movie.

SGS Thomson said it will sell a DVD player this Christmas for $499. Toshiba announced that its player would be priced at $599.

But DVD drives will not be widely available for PCs this year. It will take at least another year for developers and authors to come up to speed on the new standard and be able to utilise it properly.

Imagine: with up to 18Gb of space to fill, they will need a lot more creativity to produce titles that the market really wants.

At least six companies introduced high-end digital video cameras costing between $2,000 and $4,000.

The cameras from Sony, RCA, Panasonic, JVC, Sharp and Thomson all weigh under 3lb (1.36kg), something that will be a blessing for camera operators who are out in the field all the time.

Also, Sharp unveiled its newest ViewCam, sporting a 5in colour LCD screen on the back, making it the biggest viewing screen on any video camera on the market.

# Consumers are set to snap up new digital cameras

Digital cameras at consumer prices were another important trend at CES. A few months back, Casio and Apple had this market to themselves with, respectively, the QV-10 and the QuickTake.

But Chinon and Epson rolled out new cameras priced at $499. The Chinon camera was the larger of the two and looked more like a small video camera. However, it includes a flash and can hold up to 50 pictures in memory for downloading to a PC.

Epson's digital camera, called the PhotoPC, has 1Mb of internal storage and can store 32 standard images or 16 high-resolution images.

But since you can add storage, it has the potential of storing as many as 160 standard images or 80 high-resolution images.

Sources also tell me that Kodak will have a low-cost digital camera out by mid year, also around the $500 mark. That should put pressure on Casio to trim the price of its digital camera: the street price is currently around $760.

Casio's is still the more interesting camera since it has a 2in LCD colour screen on which you can instantly view any picture you take.

But, it does not have a flash. Casio tells me that a new flash-enabled version will be available later this year.

● Chinon's ES-3000 digital camera, with an auto zoom lens, is available from Bannerbridge for £749.

Bannerbridge 01268 419101

## Short Stories


### Digital spider crawls Web

● Digital has produced what it claims is the world's fastest and most comprehensive Web search engine.

The Spider has indexed every word on 16.5 million Web pages and 13,000 newsgroups — a total of eight billion words. Digital says it is up to 100 times faster than similar services and can find up to 2.5 million new pages per day.

You can try it out for yourself at www.altavista.digital.com

### Help on Help translations

● Oxford Computer Consultants and California's Blue Sky have launched a package which converts Windows Help files into Web pages.

The Help-to-HTML converter costs £159, or is free to owners of Blue Sky's RoboHelp or WinHelp Office Help authoring products who buy a £159 Web authoring plug-in.

OCC 01203 690934

### Acrobat show

● Adobe is running seminars this month, in Manchester, Coventry, Glasgow, Dublin and London, on online and CD publishing using its Acrobat product and other software. Fax 0181 606 4004 for details.

● National Instruments has announced a new range of Pentium-based embedded controllers. Full details are at www.natinst.com, or call 01635 523545.

## Short Stories

### Fast colour

● Tektronix claims the new Phaser 550 colour laser printer is the industry's fastest, producing five pages per minute in colour and 14ppm in black and white. It's also capable of printing at a full 1200 x 1200dpi and costs £5,795.

Tektronix 01628 403300

### Carrera duo

● Carrera Technology has brought out two PC systems, "Home Executive" and "Family Education", in a new series tailored to meet customer requirements. Both cost below £1,300.

Carrera Technology 0171 830 0586

### Cheap vision

● The price of Visioneer's PaperPort Vx, the all-in-one fax, photocopier, printer and business card has been cut by £70 to £299.

Visioneer 01732 464624

### Soft bundle

● DataBecker has put together a "SoftBrick" CD-ROM of twenty software utilities and programs which, when sold individually, were previously valued at over £250. But the SoftBrick, with ten accompanying books, costs a mere £29.95.

DataBecker UK 01420 22707

### Big picture

● Hitachi has launched the new HM series of 21in colour autoscanning monitors. Specifically designed for very high resolution applications, they offer greater brightness and the highest contrast ratio available. With high refresh rates, flicker-free sharp images are also ensured.

Hitachi 0181 848 8787

### Upgrade kit

● Aztech is offering the Sound Galaxy Stellar 6X multimedia upgrade kit, comprising a 16-bit sound card, a 6x IDE CD drive, powered stereo speakers and a range of CDs for £229.

Aztech 01734 814221

Touchstone 0181 875 4456

# Your chance to learn at the top Windows showcase

The sixth annual Windows Show, from February 26 to March 1, is the showcase for every new Windows development.

PCW is sponsoring a series of seminars to coincide with the show at the Olympia conference centre

Bringing together leading trainers and consultants, the one-day (9-30pm to 5pm) sessions will focus on applications of the Microsoft Office suite.

**Monday 26 February**

**Basic Visual Basic**

● This seminar, particularly suited to experienced PC users who are not developers, will allow you to immediately develop powerful custom business solutions. Realistic applications will be demonstrated and built up during the day, and all delegates will receive a disk of sample applications together with source code.

**Access Essential Overview**

● A comprehensive introduction which will explain how to create powerful database applications. Ideal for developers who are relatively new to Access and as a foundation course for the MasterClass.

Office academy

Personal Computer World

Office 95 Productivity Masterclass

Does Office 95 deliver the promised productivity gains? We will study the new feature set and analyse the benefits.

**Tuesday 27 February**

**Word Masterclass**

● Improve your skills and productivity. Emphasis will be placed on Word's use as a component of bespoke systems.

**Desktop Publishing with Word**

● How best to use Word's creative features and what can be used to give a document real impact.

**Design and DTP with Windows**

● Issues to consider when setting up a DTP unit within your organisation.

**Wednesday 28 February**

**Forecasting and Financial Planning with Excel**

● Fundamentals of business planning, and a comprehensive review of Excel's use for all aspects of business analysis.

**Thursday 29 February**

**Excel Masterclass**

● A thorough look at Excel's advanced features. Assumes a basic knowledge, but not programming know-how.

**Friday 1 March**

**Management with Microsoft Project**

● Basic principles of Project Management and the benefits that can accrue from Project's proper use.

The seminars will be conducted by City-based Training Solutions, recently chosen as a Microsoft Authorised Training Centre. All cost £315 + VAT. For more information call 01256 381583 or fax IT Seminars on 01256 381813.

# Paradox and Sovereign go Win 95


Borland is shipping its Paradox 7.0 database for Windows 95 and NT. It comes with new developer's tools and help for existing Paradox users upgrading to Windows 95.

New features include Experts that automate database tasks, usability enhancements, and integration with Microsoft Office 95 and Novell's PerfectOffice.

The estimated price for new users is £99, or £79 to owners of application suites.

Leading UK account specialist Sage has issued the first Windows version of the principle modules of its Sovereign business package.

The new versions of Sovereign's System Manager and sales, nominal and purchase ledgers will run on Windows 3.11, 95 or NT. They are file and function compatible with the DOS versions.

"This means that you can happily run them on a network on which some people are using Windows and others are running DOS for high transaction processing," said Sage's David Pinches.

A starter pack with the four main modules, in either DOS or Windows versions, plus Sage's Windows report writer, costs £1500 — though most packs are sold through dealers who charge extra to tailor the modules .

Borland 01734 320022, www.borland.com;
Sage 0191 201 3000, www.sage.com

## Short Stories

### Toshiba launches low-cost Pentium

● Toshiba has launched what it describes as an "aggressively priced" 75MHz Pentium-based portable, the Satellite 100. It boasts a 10.4in dual-scan colour screen, a 520Mb disk and 8Mb of memory, and shares many features with the high-end Satellite Pro models — including docking compatibility.

The price will be "significantly below £2000".

Toshiba 01932 841600

### Music offer

● Yamaha has issued its main Hi-Tech dealers with a CD-ROM of more than 100Mb of public domain software for use with its products. Charges to customers will be down to the individual dealer.

Yamaha 01908 369269

### Wide view

● Wide-load vehicle drivers will be able to plan their routes without getting stuck on bridges, with the aid of PARS software from GDS, which is designed to cope with all aspects of moving awkward loads.

GDS 01483 725225

### Global deal

● California-based Global Village has bought the UK ISDN remote-control specialist KNX in a $28 million deal, which will be known as Global Village Communications UK.

GVC 01756 702500

### Wrong number

● The number given last month for Compware, which offers Teletext viewer software for £50, was incorrect. The correct number is 01223 425203, or contact webzone1.co.uk /www/compware

### OLE!

● dLSoft is offering an OLE developer's kit to allow you to incorporate bar code images in Visual Basic 4, C, Visual C++ and OLE-2 apps.

dLSoft 0181 559 0049

# Microsoft in piracy raids on Select firms

Microsoft warned last month that it will make random checks for unlicensed software on companies.

More than 600 companies have joined its Master Select program, under which they get a master CD of software and pay for what they use.

A clause in the contract entitles Microsoft to make a software audit, which involves checking what each machine in a company uses.

Anti-piracy business manager Mark Roberts said checking was complicated by the fact that some 25 percent of PCs were not networked.

The target companies were warned about the audit just before Christmas. Roberts said: "About 160 replied and all were very responsive."

This left 440 who did not reply, but Roberts did not expect any objections.

He was satisfied that the terms of the Select contract gave auditors nominated by Microsoft the right to investigate firms.

But fewer than 10 are expected to be checked out in each quarter.

**Chance your arm on BT's portable office!**

It may be good to talk but, lady, I only asked you for the time!

This prototype of a portable office is working but British Telecom has yet to make any decisions on its commercial future. Wearing it is BT director Patricia Vaz, named Business Woman of the Year

The "Office on the Arm" has a miniature colour screen and mouse pad while the visor puts a larger display in front of one eye. A keyboard is not needed, because the system uses voice recognition software.

**Joanna Scott**

# New drivers add sparkle to Diamond boards

Diamond has developed a new set of drivers for its Stealth 64 series multimedia accelerator boards, offering a speed boost of up to 84 percent over the versions shipped with Windows 95.

Beta versions of the drivers for the Stealth 64 Video 3000, 2000, and 2001 boards should be available at Diamond Multimedia's Web site by the time you read this.

The new Diamond GT (graphics technology) drivers boost the performance of a Stealth 64 Video 3000 card by 62 percent in 8-bit colour mode, 65 percent in 16-bit colour, and 84 percent in 32-bit colour.

New drivers for the Diamond Speedster line and older Stealths will become available later.

Diamond 01753 501400

# Vendors rush out 166MHz Pentium PCs

PC vendors are rushing to announce models based on Intel's latest fast Pentiums, clocking 150MHz and 166MHz.

Among the first off the mark was Viglen, with 150MHz and 166MHz models in its Genie range. Prices start at £1699 (ex VAT).

IBM announced that it would have 166MHz models available throughout its PC range, starting with the PC 300 family with memory options up to 128Mb.

Dell announced options at both high clock rates in both its OptiPlex and Dimension ranges. The OptiPlex models, starting at £2,435, include integrated 3Com networking and 16Mb of EDO memory.

Apricot's L8550, VS550 and minitower VS660 ranges will also offer models with the new fast processors, available immediately from PC World susperstores.

Viglen 0181 758 7000; IBM 0345 (sic) 727272; Dell 01344 720000; Apricot 0121 717 7171

## Short Stories

### Japanese study aid dogs net

● Lava Software has released Japanese WordMaster v3.1, a Japanese language study aid including a powerful Japanese-English Kanji dictionary — and this Samurai dog.

Suitable for intermediates to advanced it operates on the Macintosh, but a Windows version is under development.

Download a demo from Lava's Web site at http://www.ozemail.com.au/~lavasoft/.

**Joanna Scott**

### Software boom

● Sales of PC applications software in Europe soared by 58 percent to $471,6 million in the third quarter of last year, says the Software Publishers Association of Europe. Microsoft's Windows 95 operating system was launched in August.

Total software sales over the same period rose 16 percent over the previous year to $1.4 billion.

SPAE 33 1 45 63 02 02 (France)

### CD series

● Planet Earth: The Story of Environmental Awareness, Women's Rights, The Story So Far, World War One and World War Two are CD titles in a series from News Multimedia called The Times Perspectives. They are available from April.

News Multimedia 0171 782 3972

# Mass use of interactive system '15 years away', say researchers

The PC rather than the TV set will lead the move into interactive mass media, according to experts canvassed for a new research programme.

We may need to wait for old connections to wear out before the cost of providing switched broadband interactive connections can be justified.

But several cable companies are experimenting with the use of special modems capable of delivering 4Mbits/sec to a PC, says a preliminary working paper* for the London Business School programme.

Co-author Kathy Hammond believes mass interactive systems will take about 15 years to develop, and that the growth of cable-based systems will be slowed by the advent of satellite-based digital television.

"The satellite will be the delivery system, with the phone providing the back channel for interactivity. So you might see a menu of videos on your TV screen, and choose one using your remote control. This small amount of information can be sent down a phone line."

But she admits that predictions in this area are unreliable, in that no-one is quite sure how generations brought up on the computer will use the emerging technology.

"People who invent things don't always know what they will be used for. The people who invented the VCR thought it would be used basically to time shift [i.e. view programmes out of schedule]. In fact, it was used mostly to look at videos and proved an enormous benefit to the film industry."

More than 40 companies are paying £5,000 a year to fund the research programme, which starts in full later this year. It will focus on online entertainment, person-to-person communication, electronic shopping, information publishing, marketing, and telecommuting.

In addition it will look at the trade-off between transportation and telecommunication, and the shift towards Cyberfirms which use interactive media as their main method of trading.

LBS 0171 262 5050

** Interactive Mass Media, a review of evidence and expert opinion from the USA and the UK, by Kathy Hammond, Dorien Pluim, and Katrien Vanden Eynde.*

# Parc your Web page

A new development environment for World Wide Web applications has emerged from Xerox Parc, where the graphical user interface and object-orientated programming were pioneered.

The big advantage of VisualWave is its ability to produce Web applications that "listen" — that is, they obtain information from customers, then analyse and respond to it, according to ParcPlace-Digitalk, the Xerox spin-off which is selling the system.

VisualWave is based on the SmallTalk object-orientated language, and the use of objects facilitates "hot updating" of Web sites: a price, for instance, can be changed without blocking access to the site.

The environment can output pages in HTML and will eventually be able to output Java code. It facilitates complex interrogation of databases, and supports the PC, Mac and Unix platforms.

ParcPlace-Digitalk 01252 719100


# Cosmo gets interactive

Following strategic alliances with Sun Microsystems and NetScape, Silicon Graphics has announced a new set of tools to create interactive, 3D worlds for the Web. Cosmo uses Java and VRML compliant tools and a drag and drop editor to create "next-generation" sites.

Only available for SG platforms, the Cosmo suite of applications is expected to ship by June.

Silicon Graphics 01734 257500

http://www.europe.sgi.com

# Web Times is Murdoch's testbed for future media

Rupert Murdoch launched his flagship UK newspapers on to the Web last month as a testbed for the media of the future.

The Times, The Sunday Times and The Times Higher Education Supplement have free Web editions, containing all the information in the printed editions.

But the pages are completely redesigned to suit the Web format. A search engine covers all sections including classified advertising, which Murdoch's New International believes is particularly suited to the medium.

There is also a rolling news service, which in the first stages will be updated four times a day. Most intriguing, although primitive at the time we went to press, was a facility for choosing subjects you are interested in.



This could lead to papers (or whatever replaces them) tailored to your interest.

Sunday Times Innovations editor Christopher Lloyd called this "valetting", with the PC vetting your visitors. "I think this is the way newspapers are going to go. They will act as a filter in an age of information overload," he said.

News International is looking into the possiblity of broadcasting the news feed by satellite at night, ready for readers in the morning. This is already done with Usenet news. The distinction between newspapers and TV will blur, with pages having links to live news feeds and video clips.

Internet publishing manager Andrew Burke said he did not expect the project to break even for two years. "This is very much a long-term thing," he said.

Early tests of the system indicate that it does not threaten sales of paper-based news. "When we put the Higher Education Supplement online sales went up by five percent," Burke said.

The Web site was launched with a specially tailored version of Motorola's £189 Internet Solution package, which contains everything you need to get online.

The addresses are www.the-times.co.uk and www.Sunday-times.co.uk.

Motorola 01293 404343

# Sites using old software leave the door open to Web hackers

NCSA 1.3 server software is still among the most commonly used at Web sites — months after it was shown to leave them wide open to hackers.

Users include some "very well known organisations," according to Netcraft, which monitored more than 74,000 Web sites.

"Information on how anyone can obtain remote access on a computer running this server has been widely available since February 1995," the company said in its regular survey of Web sites.

It was shocked to discover last August that many sites had not upgraded, and they had still not done so by the start of 1996.

A Netcraft statement said: "This shows the Web community in a very different light from [that of] the popular media coverage; complacency and ignorance are clearly as present in this community... as in any other."

The NCSA software comes from the National Centre for Supercomputing Applications at Illinois University, birthplace of the groundbreaking Mosaic browser and still a favourite source of Web software.

Security patches were released last year, and the latest version 1.5 is believed not to be vulnerable.

NCSA software is used by more than one in three sites, and the vulnerable version 1.3 is used at more than one in ten. But there is a trend towards commercial software, with both NetScape and Apache packages rapidly overtaking NCSA.

Details of the security loophole are available at www.netcraft.com/security/http/ncsa13.html, and you can find Netcraft's survey at www.netcraft.com/survey.

## Short Stories

### Dash it all

● An application programming interface with C/C++ and Delphi 32 source code called the Dashboard Software Developer's Kit can be downloaded free from Starfish Software's Web site at (http://www.starfishsoftware.com). The new software kit will enable developers to create modules that can be executed from with Dashboard 95.

Starfish 0181 875 4455

### How to beat memory loss

● UK companies have come up with two new products to foil burglars targeting memory chips which are worth much more than their weight in gold.

DTL is offering a £55 trembler alarm which fits into a PC expansion slot and emits an ear-piercing scream when the computer is moved.

Kodit is offering special tags which bond to a chip and have a unique number which can be registered with the company's national database.

Kodit 01625 529283

### Mapinfo 4.0

● MapInfo Professional v4.0 will install under Windows 3.1, 95 or NT 3.51. The fully-featured mapping, spatial analysis and GIS system integrates database information with maps and graphics.

Mapinfo 01344 482888

### Virtual 3D

● NetManage is bundling a Virtual Reality Modelling Language (VRML) viewer, Chaco Communication's VR Scout, with its Chameleon Internet suite for Windows 95 and NT.

NetManage 01773 863666

### New scanner

● Microtek's new ScanMaker E3 single-pass 24-bit, 300 x 600dpi colour scanner is available from Computers Unlimited for £299.

Computers Unlimited 0181 200 8282

## Short Stories

### 1.3Gb Jaz-beater from Syquest

● The battle of the super-floppies hotted up at Mac World last month when Syquest announced a 1.3Gb removable storage drive.

The SyJet drive is a direct evolution from the traditional Syquest drive which became a de facto standard data-transfer medium for graphics.

But new low-cost models from Iomega brought similar storage into the mass market. Iomega's latest 1Gb Jaz drive is due out this year.

The SyJet seems pitched to out-spec the Jaz. It boasts an average seek time of 11 milliseconds and a sustained transfer rate of 4Mb a second.

It will cost about £350, with one 1.3Gb 3.5in cartridge. A 1.3Gb cartridge will cost £60, but the drive will also read 650Mb cartridges costing £40.

The SyJet will be available in Europe in IDE and SCSI versions in April.

Syquest 01624 362266

### Apple baulks at Win95 deal

● Apple has refused to sign a standard licence for Windows 95 because of a clause exempting Microsoft from prosecution for patent infringements.

The licence is needed for Houdini 486 boards, which allow Macs to run Windows native. It would allow Windows 95 to be preloaded onto Macs. Apple has claimed that Microsoft has infringed its patents, notably in Video for Windows.

### Power kit

● JYACC is about to ship a suite of client-server development tools for the Power Mac.

JYACC 0171 814 6660

Newsprint welcomes your news,views, Web sites and graphics. Send them to clive_akass@pcw.ccmail.comuserve.com or cakass@dial.pipex.com

# New merger rumours as Apple reports a $68 million loss

Rumours abounded at press time that troubled Apple was about to merge with Sun or Oracle. The speculation was not new (IBM has also been named as a suitor) but gained impetus from news of a $68 million loss for the last quarter of 1995.

Apple was also expected to lay off staff and announce that it would not try to compete with cheap PCs at the low end of the market. Another possibility is that it will get out of hardware altogether and concentrate on selling its operating systems.

The figures also sparked rumours that Apple chief Michael Spindler was about to go. UK md Mike Newton quit just before Christmas as part of a major shakeup of Apple's European operation.

Gone is the system where each country had its own general manager; instead there will be a single pan-Europe organisation led by Apple Europe president Marco Landi. Apple UK spokesman Russell Brady said the new arrangement would enable Europe to co-ordinate its activities and present a united stance to the US.

He admitted: "In the past, Europe's voice has tended to get lost at [Apple's California HQ at] Cupertino."

One result of the revamp, and this new united voice, will be a minitower model targeted at Europe.

# Free Shockwave for FreeHand

Macromedia is posting free add-ons for NetScape which will allow you to view FreeHand images. Shockwave for FreeHand, which follows a similar product for Director files, will enable users to create and view FreeHand graphics on Web pages.

The Mac edition of FreeHand Graphics Studio is also due to ship this month. It includes FreeHand, xRes, Extreme 3D and Fontographer. The Windows version will follow shortly.

Full details at www.macromedia.com, where you can also find a gallery including this FreeHand picture.

Macromedia 01344 761111

**Top 10 Windows and DOS**

| | Product | Manufacturer | Last month |
|---|---|---|---|
| 1 | Encarta 96 | Microsoft | 1 |
| 2 | Windows 95 U/G | Microsoft | 2 |
| 3 | Qemm V8 | Quarterdeck | - |
| 4 | First Aid 95 for Win95 | RMG | 3 |
| 5 | Magnaram 95 | Quarterdeck | 7 |
| 6 | MS AutoRoute Exp UK & IRE | Microsoft | 6 |
| 7 | MS Plus for Win95 | Microsoft | 10 |
| 8 | Softram 95 | RMG | - |
| 9 | MS Cinemania | Microsoft | 5 |
| 10 | MS Office 95 U/G | Microsoft | 15 |

**Top 10 DOS**

| | | | |
|---|---|---|---|
| 1 | Flight Simulator v5.1 | Microsoft | 2 |
| 2 | Fifa Soccer 96 | Electronic Arts | - |
| 3 | SimCity 2000 | Maxis | 8 |
| 4 | Hexen | Raven | - |
| 5 | Turbo C++ v3.0 | Borland | 5 |
| 6 | MSDOS v6.22 | Microsoft | 4 |
| 7 | Fun School Maths | Europress | - |
| 8 | Worms CD | Pinnacle | - |
| 9 | PCDOS v7 | IBM | 3 |
| 10 | Doom 2 | Virgin | - |

**Top 20 Windows**

| | Product | Manufacturer | Last month |
|---|---|---|---|
| 1 | Encarta 96 | Microsoft | 1 |
| 2 | Windows 95 U/G | Microsoft | 2 |
| 3 | Qemm | Quarterdeck | - |
| 4 | First Aid 95 for Win95 | RMG | 3 |
| 5 | Magnarum 95 | Quarterdeck | 7 |
| 6 | AutoRoute Exp UK & IRE | Microsoft | 6 |
| 7 | MS Plus for Win95 | Microsoft | 10 |
| 8 | Softram 95 | RMG | - |
| 9 | MS Cinemania | Microsoft | 5 |
| 10 | MS Office 95 U/G CD | Microsoft | 15 |
| 11 | Uninstaller 3.0 | Microhelp | 11 |
| 12 | Page Plus Home/Office CD | Serif | - |
| 13 | Dr Solomons Anti Virus Quarterly | S&S International | 9 |
| 14 | MS Publisher v3.0 | Microsoft | 13 |
| 15 | Dr Solomons Anti Virus Quarterly '95 | S&S International | - |
| 16 | MS Office Pro 95 | Microsoft | 8 |
| 17 | Cleansweep 95 | Quarterdeck | 12 |
| 18 | MS Office 4.2 U/G | Microsoft | 4 |
| 19 | Bodyworks v4 CD | SoftKey | - |
| 20 | History of the World | Dorling Kindersley | - |

Figures supplied by Software Warehouse and relate to bestsellers for December 1995.

# Uncle Sam wants **you**

**The launch of America Online in Europe will mean a shake-up of the online landscape. Jack Schofield reports on the new giant on the block.**


ANALYSIS

America OnLine (AOL) has arrived in Europe having been launched in Germany at the end of 1995 and in the UK earlier this year. AOL is already the world's largest online service, and must conquer Europe to maintain its astounding growth. Last year, it signed up three million new users, taking its total to 4.5m. European operations are a joint venture between America OnLine and Bertelsmann, the German media conglomerate.

AOL was formed in 1990, the year in which CompuServe opened its European operations. It has grown bigger faster by concentrating on consumers rather than the businessmen and hobbyists who pioneered the online market. They were attracted to CompuServe by its support forums, database services and such like.

AOL's appeal is different: it has colourful graphics, it's easy to use and one of its most popular features is online chat. Where CompuServe maintains an air of seriousness, AOL pulls in the mums and the kids with its sense of fun.

There are other differences in emphasis: CompuServe is a global service with some local content; AOL presents itself as a series of linked local services. AOL's advantage is that it's better integrated with the Internet. You can click on-screen buttons to read Usenet news or surf the Web and these functions are almost a seamless part of the service. Usenet newsgroups have their own names and descriptions on AOL and Web sites appear on the same menus as AOL forums.

In contrast to CompuServe's WinCIM 1.4 and CID, the Internet Dialler, you can log on for either a CompuServe session or an Internet session but not both. Only with the recent arrival of WinCIM 2 can you do both at once. AOL has a better UK access network, too, with about 80 percent coverage at 28.8Kbits/sec, based mainly on the Energis network. And AOL claims to be cheaper. It has a standard charge of £5.95 per month for five hours' use (extra hours are £1.85 each). There are no extra charges for modem speed, use of access network or content.

The UK managing director, Jonathan Bulkeley, says: "If it costs extra, we won't link to it." A simple charging structure was considered more important for the consumer, so some gems like CompuServe's Executive News Service have been sacrificed.

The next year should see some tough competition between AOL and CompuServe. Both will have to compete against Internet service providers, some of whom feel that the days of giant, centralised online services are over.

Certainly, it's now hard to launch a proprietary service in competition with the World Wide Web, as AT&T has found: it has just backed down over its Interchange system (bought from Ziff Davis at the end of 1994). AT&T now says Interchange will "dissolve" into the Web. Apple plans to do much the same with eWorld, which uses technology licensed from AOL.

Microsoft has changed direction, too, with the Microsoft Network. This began as a proprietary network with Internet links, but is now becoming an Internet service with features like the ability to run CD-ROMs remotely. Even IBM's long-running but unsuccessful Prodigy service is busy converting its videotext content into the Web's HTML format. Recent arrivals like UK Online and the Dutch Planet Internet have begun using Internet standards for their own content.

AOL and CompuServe seem big enough to survive the growth of the Web: not by ignoring it, but by including it. For instance, all Web content becomes AOL content and AOL provides a service by picking the best Web sites, adding them to appropriate AOL sections and maintaining links. AOL goes further by cacheing Web pages and using powerful compression algorithms to send them. AOL and CompuServe can also help new users onto the Internet by providing integrated software, reliable international access networks and telephone support.

Both services are expensive for heavy Internet users compared with "all you can eat" deals from suppliers like Demon, Pipex and others. But even this has another side. When you pay a flat monthly fee, the service only needs to be good enough to prevent you quitting and going elsewhere. When you pay by the hour, it's in the supplier's interest to make it as easy as possible for you to arrive and stay online. An engaged tone doesn't save the supplier money, it "costs" money.

# The enemy within **Windows 95**

**DOS may have been a monster but at least it was the devil you knew. Clive Akass tells a cautionary tale.**

ANALYSIS

Windows 95 was supposed to see the back of DOS; a promise that went the way of the one about how the new operating system was going to run on 4Mb of RAM. Actually, I never wanted to get rid of DOS, which is still the easiest way to do some tasks. But a minor disaster preparing last month's Newsprint column taught me that the version lurking beneath Win95's bright new face is a different animal from the one we knew and loved/hated.

I'd been working for some hours, when I needed to look something up on the Web. Instead of using NetScape, as usual, I decided to go online from within Word, using the new Internet Assistant. This is the way we will all be working, if Bill Gates has his way and Web facilities are incorporated more tightly into the Windows environment.

Internet Assistant works, even in the present incarnation, but there are pitfalls for the unwary. I ended up with several Web pages open within Word, plus the document I had been writing. I found what I was looking for and closed all the documents, ignoring the cautionary prompts.

In my haste I closed the document on which I had been working. And no, I had not backed it up. This was daft, but not that daft: from past experience, I assumed I would be able to retrieve the file. Word keeps a backup, which it opens automatically after a machine crash. The backup would have been deleted in this case, because I had formally closed the document, but under Windows 3.1 and the old DOS I could easily have undeleted it.

Not so, it turned out, under Windows 95. The Recycle bin was no help because it holds only files you delete, not those an application deletes. So I resorted to the new DOS: its Undelete function discovered the backup file but refused to restore it, giving me instead a cryptic message about a Lock command.

I had never heard of this and neither, apparently, had DOS: it did not appear in the Help command list (though I discovered later that you do get a one-line explanation by typing Lock/?). It was getting late, so I entered the word Lock: DOS did not object so I again tried Undelete, and to my relief it worked; six hours of work saved.

But then I could not get back into Windows, which came up with a protection-error message. Even typing Unlock made no difference. I thought it was a good time to try Digital's new Rescue Service (see January's Newsprint: the service supports all major hardware and software and costs £117.50 to sign on, plus £20 for each call, with the first five free). The pleasant Irishman who answered my call found the answer.

It seems that Win95, partly because of its need to reconcile its long filenames with the old 8.3 DOS variety, does not normally allow applications direct access to disks. Lock is a new command which unlocks the disk for direct access. This allows you to undelete a file. When you have finished, you should immediately type Unlock, which locks the disk again. Makes perfect sense, doesn't it?

The protection fault seems to have been caused by my delay in typing Unlock, but I am still unclear as to what happened. Digital got me back into Windows by suggesting that I bypass my SYSTEM.INI file.

I would avoid using Lock and Unlock unless you have to, or unless you know what you are doing, and be warned that Undelete is not the fallback it used to be (Microsoft tells me there is no Undelete in Windows NT, due to security considerations).

You can avoid the problem altogether by using the new Norton Utilities, which provides a Recycle bin that stashes all deleted files. Or by backing up sensibly like we journalists are always advising. Meanwhile, Microsoft might help by documenting its Lock, Unlock and Undelete commands rather better.

● Digital 0345 440011; Internet Assistant can be downloaded free from www.microsoft.com; Norton Utilities £129 (£139 on CD) from Symantec 0181 982 6363

## Post haste?

I've been working on a long-delayed feature about packages built around new, combined, fax/modem and sound cards including the MiroConnect suite, featured in January's Newsprint. It struck me how rarely we send email directly to a remote PC.

Email is almost invariably indirect, going through some kind of postbox system. Postboxes have their advantages, but they lack the fax's immediacy and instant confirmation of receipt. Anyone with a slight knowledge of comms can set up a direct phone link between two consenting PCs. The trouble is that there are too many ways of doing it. If everyone were to agree on a protocol, you could send email in the same way as you fax, simply by dialling a phone number.

So why isn't everyone pressing for an agreement? Perhaps you should ask the online services, whose market is driven by postbox email.

# The razor's edge

**Tim Bajarin** **predicts the growth of upgrades and peripherals, and the end of Apple as we know it.**

Last year was pivotal for the PC industry, showing us for the first time what the information age might look like. But 1996 will bring problems for many PC vendors, who have to deal with shrinking margins (as low as ten percent) and increased competition. To survive, they will have to reduce their manufacturing, component, and R&D (research and development) costs.

They'll have to focus more on key growth markets, too. The target for companies like Compaq must be an easy-to-use loaded multimedia PC that sells for under $1,000, aimed at the 20 million new homes expected to buy PCs in the next three years. This calls for better ease of use and integration of voice, video, sound and animation.

I expect a big Japanese company, like Sony, to enter the US market later this year with a fully-loaded multimedia PC priced around $949. This would be a Pentium 75MHz system or better, with 8Mb RAM, a 500Mb-plus hard disk, quad-speed CD-ROM, modem and colour SVGA monitor.

The vendor would be almost giving the machine away at that price, but a Japanese giant might see it as a chance to gain instant market share and become the major PC vendor in the consumer market. This could be a threat to, or an opportunity for, other PC vendors who will have to look elsewhere for their money. The analogy is the razor; bought as a one-off but leading to big sales of blades: the PC becomes the razor, with peripherals, services and software as the blades.

Companies like Hewlett-Packard are in great shape when it comes to peripherals; their margins have been consistently higher than those on PCs. This could be the way Sony goes: selling a $949 PC at cost price but able to display profitable Sony-owned movies, CD audio content and games. Sony has the bandwidth and deep pockets to invest in online services, too, which alone could push the rest of the industry in the same direction.

We should see the first PC/TVs designed specifically for the living-room. Most PCs use 14in monitors which sit two or three feet from the viewer. The new breed, due to hit the market this year, will have 30in-plus monitors designed to sit eight feet from the user. These will be high-priced systems but will become the focus of a critical new trend.

PCs will gain importance as desktop replacements. There is a real trend, in large and medium-size businesses, towards using notebook computers as primary computing devices. Although there will continue to be strong demand for desktops, the kind of power you can get in a notebook package is making these computers an attractive alternative.

I also expect to see new PDAs and personal communicators that will help them gain more attention in mainstream computing. They will not be consumer devices but will appeal to those business users who want desktop-class data availability in their pockets.

PC vendors need to kiss Bill Gates' hand for Windows 95. This product alone will drive the upgrade market sky high as users buy more memory, new chips and new computers to run the new operating system efficiently.

But don't expect DRAM prices to come down this year. Windows 95 needs at least 8Mb of RAM to run, and more is preferred; video, stereo audio and 3D graphics demand more memory, too. So the existing DRAM plants will be running 24 hours, seven days a week, just to keep up with basic demand. But at least four new DRAM plants begin operations in early 1997, which should make DRAM more plentiful and reduce prices.

Finally, I believe Apple will either be bought by, or merged with, another big computer company this year. It has suffered serious losses in market share and its ability to remain profitable has been significantly hindered. It cannot survive on its own.

Bear in mind that Apple has not only to carry out R&D for its hardware business, it incurs heavy costs creating and maintaining new operating systems for the Mac. It has to keep margins above 20 percent just to break even. If Apple has to cut prices just to remain a player in the market, there could be losses unless drastic measures are taken; a major layoff within the company seems inevitable.

IBM, AT&T and Motorola have been mentioned as potential buyers. My vote would be for Sun Microsystems and Apple to merge. Sun owns the workstation and network market but has no presence in the home. However, Apple has a great presence in the home and education market, but very little in business.

But that may be wishful thinking. I have no idea who would really buy Apple with its current problems. But, I think 1996 will be the year Apple gives in and looks for a partner.


*Sony could move from PlayStation games machines, into the PC market*

ANALYSIS

# Computations

BY ROWLAND MORGAN

## Another amazing subsidy of cars

About seven percent of a car is plastic, and an estimated 1.5 million tonnes of automotive plastic waste is dumped, free of charge, on the British landscape every year. That's the equivalent of 15 supertanker cargoes, and an incalculable subsidy of cars which gets overlooked. Twenty years after environmentalists started worrying about these things, the Treasury has been required by the EU to step in, and (where it is dumped legally) auto-plastic and other junk is going to be charged (as of 1st October, 1996) at £32 a tonne, at landfill. Hardly a radical step, since the tax will raise from auto junk only £33m, which would value a plastic Eiffel Tower at a mere £317,000 — or less than the total cost of a government minister's car. The weight of the Whitehall car itself, in plastic junk, would bring roughly the price of a packet of cigarettes to the public purse.

Most of the dumped plastic is recyclable into things like plant-pots and traffic cones and even back into car bumpers, but unfortunately, by the time anybody has worked out to which of hundreds of polymer compounds a piece of junk belongs, the dismantling of the vehicle has exceeded a 30-minute threshold beyond which the whole operation apparently becomes "unprofitable". Ford has now financed production of a hand-tool which scrapes-and-sniffs plastics to identify them. Illustrating the Soviet-style inefficiency of trans-national corporations, Ford claims to have invested over £3,100m in European environmental protection research programmes since 1984, and they're still, quite literally, scratching the surface.

**● Sources: Recycling World/Quid 1995, Robert Laffont, Paris.**

**STATELLITE**

• An average Briton born today can expect to watch TV for 11 solid years before dying — not counting the years spent on games and the Internet.
Source: BFI Film & TV Handbook 1995

• From You Only Save Planets Twice: the clever, useful, Accura 288 add-on modem was overdue from Hayes, but Bond's heart still sank when the shiny new unit slid out of the pulp pack, for embossed on the back was Made In China, and 007 knew that the rogue Taiwanese republic was a member of no international organisation. And, that its 30,000 polluting factories, unlike Europe's, had a licence to use planet-murdering CFCs for cleaning circuitry.

"Moneypenny," he gritted, "shouldn't we get Hayes International into line?"

● Sources: National Geographic/UNEP.

**STATELLITE**

Since the year most hand-held spray-cans were found to be damaging the ozone layer, British Airways' uncatalysed Concorde fleet has sprayed more than 90,000 articulated road-tankers' worth of burnt kerosene directly into it; or the equivalent of more than nine billion spray-cans.
• BA Concorde fleet hours in air since 1976: 109,410
• Litres of kerosene burned per hour: 25,629

**● Source: BA Fact Book 1995 (Road-tanker: 31Kl; spray-can: 300ml).**

## Can't they get a handle on this?

Of 18 joysticks displayed at a west London computer superstore, ten were ambidextrous, and eight were suitable only for right-handers. It meant that 44 percent had warped handles. Those writing left-handed in this country are put at between 10 to 15 percent of the population, or about nine million people. Southpaws are believed to include a higher proportion of males, who are particularly likely to use computer joysticks. Among the units which bar up to one-fifth of players from using them properly are: Microsoft's new Sidewinder 3D Pro, three models by Logitech and others by CH Products, Simcom and Logic 3.

**● Sources: PC World/Anything Left-Handed, the specialised shop in London.**

**SAMPLE GREEN CONFIGURATION**

We regret this item has had to be skipped this month due to extended Xmas breaks at dynamic computer companies.

## The petrol smell of cyberspace

However pixelated and ethereal it may seem, the infobahn still reeks of the autobahn. Ranking Number Five in the Top 150 Silicon Valley companies is the global-warming road and air-freight business that is required to carry the forest-packaged, obsolescent, mostly non-recyclable goods all over the face of the planet. Consolidated Freightways clocks up $18 million per working-day ferrying equipment out of the smoggy glen, burning truck fuel that is one-quarter the price of Europe's, and jet kerosene that is completely untaxed.

**● Source: San Jose Mercury News, California.**

**STATELLITE**

Non-renewable petroleum, the weight of 54 Eiffel Towers, is distributed across France each year in the form of plastic parts of electrical and electronic products.

**● Source: Environmental report by Jean-Pierre Desgeorges/French Technology Institute.**

## Winging it in more ways than one

All the Internet nonsense aside, video-conferencing offers really serious promise for saving the planet. Scientists acknowledge that jetliners are dangerously global-warming and can never be catalysed.

Concorde has burned the equivalent of nine billion spray cans up there in the ozone layer, and an eco-crétin called Mr Fred Finn is so proud of having flown in it 700 times, he got his photo into the Guinness Book of Records.

However, he could have travelled his 11 million transatlantic miles in a few seconds by digital image. How long can fossil-mad flying last in its present form? BA's 1995 operating profits increased by 32 percent, although in the same year 28 percent of all its global-warming aviation on untaxed fuel was done with empty seats. Whoever heard of an empty coaxial cable? Surely computer-power can program planes to take off full?

**● Source: BA Fact Book 1995 (does not include partner airlines and franchisees; empty includes crew and non-revenue passengers) US Transportation Research Board (extrapolated by 17-yr average annual increase from 814bn in 1993).**

PCW **Illustration** by Darrell *Kingsley*

# Sounding Off

Michael Hewitt

Everyone likes to watch lowlife ne'er-do-wells receiving their well-deserved come-uppance. Hence the popularity of programmes such as Crimewatch and This is Your Life. Similarly, most of us experience an inner glow — even though we won't necessarily admit to it — from seeing some smug, arrogant, self-opinionated git getting the stuffing beaten out of him. Happily, ITV's The Cook Report regularly manages to combine the two.

Not only are wrongdoers outed on camera, but in the process they often take the opportunity to give Roger Cook a good kicking, too (no doubt earning themselves a six month reduction in their prison sentence).

Last Tuesday I got the beers in and sat down for Cook's much heralded exposé of "Pornography on the Internet", hoping for the usual mix: "Good morning, Mr Nerd. We've got film of you downloading explicit gifs. What have you got to say for yourself?" "Get that (Beep) camera out of my (Beep) face, you fat (Beep)". Cue spotty anorak attempting to shove a V.34 internal fax modem up Cook's arse.

But it wasn't to be. Apart from some fleeting mention of an anonymous ftp server at the beginning, the programme was mostly about convicted sex offenders and why their names should be kept on a public database. It had almost nothing to do with the Internet. To that end, it was manifestly dishonest. Cook (whom, disappointingly, no-one tried to land one on this time round) had simply inserted "Internet" into the programme's title to get viewers hooked.

No doubt it worked. It is a fact that the words "Internet" and "pornography" *are* fast becoming synonymous in many people's minds. That's why MPs and judges are having to spend an increasing amount of time away from their mistresses, rent-boys and satsumas to protect us from it and thus uphold public morality. (Or rather, what they usually say is that they're trying to protect our *children* from it.) But are we, as a nation, genuinely in peril because of dubious images wending their way, tortuously, over telephone lines?

If you're prepared to spend enough time and money surfing, yes, you will find "glamour" pictures online. If you look hard enough — and I'm told it takes a hell of a lot of looking — you can find some really unpleasant stuff, as well. As indeed you can in some of the more seedy bookshops in Soho or on the shelves of the British Library. But then, having located it online, you have to download it.

Take P*layboy*'s Web site. Try to ftp the equivalent of all the pictures contained in one month's issue and you'll be on the phone all day. It's far more cost-effective, and less frustrating, to go out and buy the magazine itself. Likewise, for those whose tastes run to — shall we say — the more exotic, it's much cheaper (and safer in terms of maintaining your anonymity) to hire a private postal address and have transparencies mailed to you from abroad. As people did, and still do, before the Internet ever existed.

Nevertheless, say the anti-smut brigade, "girly" magazines and dubious postcards are traditionally kept on the top shelf. It's illegal to sell them to minors, whereas overtly sexual images, and nastier material, do exist online and are easily (*sic*) accessible by youngsters. Hence the need for some sort of regulation. But where's the mention of parental responsibility in all this? If your phone bill is consistently in triple digits and junior is always up in his bedroom, suspiciously silent with his PC, shouldn't you be at least a little interested in what he might be doing, if only from a home economics point of view? And if you're worried that he *is* ftping multiple downloads of Miss February (or worse) shouldn't you be thinking of installing — or getting someone else to install — one of the widely available smut-busting packages that screen this sort of thing?

Actually, the sort of material that's generally available online and that generally gets politicians and self-appointed guardians of morality hot under the collar is the sort that's been passed around school playgrounds since the days of H*ealth & Efficiency*, and no doubt before. It's part of growing up. We either grow out of it by our mid teens or else join a rugby club. The seedier material — the stuff that disgusts adults so — merely raises a laugh in children. They're too young to understand it. By the time they might be able to, they've already graduated to their parents' "Lovers' Guide" videos and thence to the real thing. Besides, as I said, even those whose job it is to go online looking for obscene material generally admit that the really offensive rubbish is rather limited and of dubious technical quality.

No, I don't think regulation or "Shock! Horror! Internet Filth!" exposés are warranted. Besides, if I were a politician and I genuinely wanted to close off the Internet, there is a far more simple solution: provide everyone in the country with free Internet access and www software, and encourage them all to set up their own homepages. The whole system would grind to a halt within hours. Not that it's far off doing exactly that, already.

Anyhow, with all the "online filth" disabled, Cookie would have to target some other area. Fruit and vegetables, maybe? "Cucumbers: why is their shape so obscenely suggestive? Incarcerate all greengrocers now!" We'll see.

# Homefront

Tim Nott

Shops — who needs them? Thanks to the glories of the Internet, we'll shortly be able to purchase anything our hearts desire, from a pizza to a Porsche, using digital dosh on the World Wide Web.

**Once you've got your Winsock sorted, installed your Web browser, signed up with an Internet provider, bound your protocols and got all that IP and DNS stuff under control, it's a simple matter of typing in a Uniform Resource Locator then browsing away. It's the sort of thing the average PCW reader should be able to manage without too much difficulty, providing the URL hasn't changed or the connection isn't dropped in mid-browse. But what of the rest of the world? To the non-anorak-wearer it's about as attractive as shuffling round in the rain with several heavy plastic bags threatening arm amputation.**

**The computer-and-Internet solution is not just expensive and complex to set up; it's slow and frustrating to use. If I'm trying to decide where to go on holiday, it would be nice to see some video footage. Even with a 28,800bps modem it is going to take several hours to download a few minutes of matchbox-sized video.**

**Fortunately, most households have a way of viewing instant full-screen, full-motion video using technology that they have already mastered. Add a set-top box and suitable cabling to a television, and armchair shopping becomes a much more attractive proposition.**

**House hunting? Let's see all the X-bedroomed houses in area Y in the Z price range. Hmm, that one looks good — let's take a video walk-through now. Click here to make an appointment to view in person. Holidays? Browse the videos, click here and someone who actually knows the resort will phone you back. Groceries? Browse the shelves and click — do you want to use last week's list as a basis for this week's? Do you want to move your favourite shops to the front of the electronic mall? Sounds good, does it not; so why isn't it happening now?**

**First, there's the question of infrastructure. Most of the cable already laid in the US and the UK is coaxial, which means two-way communication needs a separate channel — such as a second cable or the phone line. So it looks like they'll be digging up the roads again to lay fibre-optic cable. Individual households will then connect to a local (i.e. street corner) node by conventional cable.**

**The second problem is the cost of the set-top box. Typically, this contains a Power PC chip and 8Mb RAM, bringing the cost to around £700 — almost as much as a PC — and it's unlikely that this will drop in the near future.**

**So, the boxes will either have to be subsidised down to the magical £299 price-point, or better still, given away free or at a token rental, much in the same way as the highly successful (but now woefully outdated) French Minitel or the current marketing trend for "nearly free" mobile phones. There are huge potential revenues to be made by service providers from transaction charges as well as pay-as-you-go services such as video on demand.**

**The third obstacle is the attitude of the retailers themselves. With massive investment in high street and out-of-town property, few large retailers are going to welcome a sudden and dramatic change in the means of distribution. And no mall — whether virtual or actual — can hope to succeed without the presence of "anchor" stores such as BHS or Marks & Spencer.**

**But even though the big retailers would rather it happened slowly, it will happen — and it is happening. There's a pilot scheme in Cambridge, England, which has the fibre-optic infrastructure. It's happening in Australia, where they dithered for so long over cable that they were able to start from scratch with fibre-optic. So, while the Web may continue to be the place to find that obscure book or CD, those of you hoping to do their mainstream beans-and-jeans shopping on the Web are staring at the wrong screen.**

**● Thank you, everyone who responded to my January plea for sources and destinations for obsolete equipment. If you haven't received a reply from me yet (hint — email to timn@cix.compulink.co.uk gets answered first) don't give up — the sheer volume of response, coupled with the Christmas holiday and a postal strike here in France, means this is taking longer than anticipated. So don't put that ancient machine in the bin yet — you shall get a reply. Most of all, if you have corporate responsibility for disposing of old equipment, don't take the straight-line depreciation and sledgehammer path. Mail me for a copy of the growing list of charitable organisations involved in recycling surplus kit — so far, these range from disabled drivers in Norwich to secondary schools in Zimbabwe.** ■

# Straight Talking

Barry Fox

A friend just bought a computer, making three basic mistakes. You can learn from them all. She went to a shop in Tottenham Court Road that I could have told her to avoid like the plague. If you want to know the name, ask the Office of Fair Trading or local council Trading Standards Officer what electronics emporia they have hit recently.

She bought a colour portable and noticed annoying specks of bright light on the LCD screen. These are caused by stuck pixels. A faulty thin film transistor may be failing to switch its liquid crystal cell, or there may be a defect in the red, green and blue colour filter that overlies the backlit cells. The shop may have demonstrated one model and boxed up another. Even with a demo, stuck pixels may not be immediately visible if the screen is displaying brightly-coloured detail. But they stand out like a sore thumb on a blue wash screen. And, once noticed, they irritate more and more every day.

If you get a blemished screen, or any other dud product for that matter, take it back and insist on a good one. This is your legal right, *even where the goods have been bought in a sale.* Take no notice of brush-offs such as "No refunds on sale items". If faults were not declared at the time of purchase, you are entitled to a refund. You do *not* have to accept a credit note or replacement. You do *not* have to take it up with the manufacturer.

But act fast, and make a copy of any receipt you take back to the shop. Staff have been known to ask to see a receipt, and then tear it up. If you get no satisfaction, contact your local TSO. For more information on your rights, phone the OFT on 0345 224499 for a free copy of their "Buyers Guide".

My friend's second mistake was to fall for the industry's current boy toy ploy. What she really needed was an all-singing desktop multimedia PC and printer, with a very light and simple portable for text entry. She ended up with an all-singing, all-dancing, portable PC, complete with CD-ROM drive and card modem and portable printer. It cost more than a desktop and simple portable put together.

With mains adaptors, the portable system is far too heavy to carry round. The printer uses tiddly ink cartidges. The LCD screen is smaller than a cathode ray tube monitor and nowhere near as bright. Because portable keyboards are small, it will be awkward to use for long periods of desktop work.

The third mistake was letting the shop flog her a PC without Windows 95. Sooner or later, she will have to upgrade. Microsoft are clever. They don't advertise the fact that Win95 is easy to load on a Win 3.1 machine, because this would bring the Advertising Standards Authority down on them. Instead, the screen tells you this as you try and load what you have already bought.

Someone has obviously told Microsoft that what the public wants is a computer with only a thin instruction manual. Sorry Bill, but that would only work if loading Win95 were as simple as making toast or tea. It isn't, so the manual is useless.

Anyone who has spent a few years learning DOS and Windows faces a completely new set of problems when things go wrong with Win95. It's like spending ten years learning French, and then being posted to Germany.

Against my better judgment, I tried loading 95 on two machines, a 486 desktop and a 486 portable. On the desktop, pre-95 anti-virus firewall software interpreted the load as an attempt to alter the DOS/3.1 operating system, tried to repair it and fouled up the system so dramatically that I ended up having to reformat the hard disk. On the portable, Win 95 loaded from a CD-ROM drive running with a DOS driver. But 95 could not then access the ROM drive, because there was no 95 ROM driver available. "Installing the software", it then told me, waiting minutes that seemed like hours before responding to the "cancel" command.

Luckily, when I installed 95 I had clicked on the option that provides for removal. Win95 disappeared, 3.1 reappeared and the sun shone.

Why should anyone buying a new PC opt for one with Win95 pre-loaded? The answer is that at least two new CD-ROMs (Music Central and Encarta World Atlas) are available only on 95 format, not Win 3.1. Their Christmas card contained a games CD to "turn your nerves inside out". It runs *only* under 95.

Microsoft's corporate gameplan is now clear. Just as the record industry drove the CD market by excluding some titles from black vinyl release, so Microsoft will try to drive us into 95 by tailoring the software release pattern. The rest of the industry will follow, seeing it as an opportunity to sell hardware and software upgrades that would otherwise have been completely redundant.

# Business Matters

Nick Beard

How many staff are needed to run information systems? There is no correct answer to this question. There are, however, some hard truths to be found in the discussions which take place when one tries to get a budget for more. Here we will look at the task of building a mandate for the work of an information systems group.

**There is a conundrum at the core of the argument about staffing an information systems department. When properly run, a department is an efficient, multi-skilled, multi-tasking group of individuals, vital to corporate wellbeing. Every department in a medium to large-sized company likes to think of itself in this light. It is worth considering, however, how fast a company would get into trouble if various tasks were simply not performed at all. The conundrum is this: it is hard to get the job done right without resources, but it is sometimes hard to get the resources unless the job is being done right. It is far easier to get resources when there are plenty of successes to point to — successes are seen as evidence that resources are being used properly.**

**Many of the prejudices people hold about IT are based on old fashioned departments. There were the ones which ran the big old mainframes, perceived as inflexible and unresponsive to "user needs", and the ones which simply supported the creeping costs of uncontrolled PC networks — users indulging their every whim at the company's expense. In the past, information systems tended to be monolithic in approach, characterised by large, expensive mainframe computers which provided very little flexibility and equally little user control over information resources.**

**The rapid spread of PCs was in part a response to the problems of the centralised, mainframe-based approach. However, PCs brought their own set of problems. Disparate, unconnected collections of data sprang up throughout organisations, and crucial enterprise data could easily be lost. It was quite common for an organisation to be completely unaware of what information resources it had. Since information is a crucial business resource, it is too important to leave to the random selections of disparate users throughout a company.**

**Information systems and information technology are rapidly developing areas, in which it is possible for businesses to spend very large sums of money for very little return. Such technology needs specialist management — yet a modern, process-orientated department contributes more than technology management. Information services departments may therefore need to consider marketing themselves within the company: gradually teaching employees what a good IS team should and should not be doing.**

**The first step in building a mandate is to be sure there is proper user representation. We formed an Information Services Steering Committee (ISSC) with a mandate to review and approve the IS Strategy and all suggestions for software and hardware purchases, to set the overall priorities for the IS Department and to monitor progress against project plans. To fulfil this mandate, the ISSC receives regular presentations from the IS Director (that's me, for those of you who didn't know) on the IS Strategy. This allows the strategy to be discussed and, where appropriate, implemented.**

**With the overall mandate being provided by this group, the department is far better protected against accusations of failure to deliver, since as long as it does what it tells the ISSC it is going to do, the IS department is delivering. This is not just about "CYA" manoeuvring. This kind of institutional politics is vital in almost all outfits. The job of the department is then clear, and the job descriptions of the team responsible for doing it — such as the technical and systems analysts — flow more easily from it.**

**The analysts at HCI have clear objectives which point out the process orientation of the modern systems world. Their responsibilities involve maintaining a good understanding of the processes and systems requirements of the department(s) for which they are responsible. This includes understanding relationships between departments and other areas of the hospital, both systems and non-systems. They must maintain a good understanding of the issues as perceived by the people who use the information systems. This is necessary to understand the priorities of the problems as perceived by users, and to help maintain a consensus within the department(s) as to these priorities. Escalation is inevitably necessary at certain times, so the analysts must have a sufficiently good understanding of issues and their impact on the hospital to escalate issues appropriately when they need to.**

**An important part of their job, however, is to be an effective advocate for the IS Strategy. A strategy should sell itself by virtue of the benefits it brings: if only life were that simple.**

Send your letters to:

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**Personal Computer World**
**VNU House**
**32-34 Broadwick Street**
**London W1A 2HG**

or email
**editor@pcw.ccmail.compuserve.com**
or **CompuServe 71333,2330**
or fax **0171 316 9313**

# Letters

### Does not compute

I must point out the thoroughly bogus statistic in Rowland Morgan's *Computations* (*PCW,* January 96) stating that: "One in every 33 CD-ROMs makes money, and they cost an average £325,000 to publish, meaning you begin to cover the odds only after a £10.7 million investment."

This merely says that, on average, 32 out of 33 CD-ROMs make less than their production costs (on average £325,000) and that one makes more. It doesn't say how *much* more.

The calculation performed above assumes that 33 CD-ROMs must be published to ensure one success, and that the one successful CD-ROM will generate enough income to pay for the 32 failures; both of which are highly dubious assumptions.

If this really did come from *Newsweek* (29 May 95) as stated, then they ought to be ashamed. *PCW* ought to be ashamed for printing it too.

**Nick Craig-Wood**
**ncw@axis.demon.co.uk**

***Rowland Morgan replies:*** *It is kind of Mr Craig-Wood to write in but he should relax. Computations only said that you begin to cover the odds with a £10 million investment.*

*Statistics are only as strong as the validity of the point they serve to make. I believe Mr Craig-Wood would not disagree that publishing interactive CD-ROMs is still not the stuff of cottage industry and in that sense is a field of investment that goes against the infobahn trend.*

### PC equality

If Polly Bird ("One for the Ladies", Letters, January 96) had email, she would not only work more efficiently, but be able to instantly send copies of her letter to the *Guardian* and the *Independent,* where they belong.

As far as I'm concerned, computers are for both (or do I mean all?) sexes, without discrimination. In our household, it is not uncommon to see my daughter giving lessons to her elder brother, who has still not emailed me from university after a whole term there.

Maybe next month you could review the latest version of the PC (politically correct, not personal computer) Grammar Checker? Sorry this is such a short letter — it's my turn to cook tonight.

**Tim Wood**
**timwood@cix.compulink.co.uk**

### Hats off to Apogee

I ordered a copy of Wacky Wheels by fax, direct from Apogee in the States at the end of November. It was for my son as a Christmas present, and something he badly wanted.

Mid-December came and went with no delivery, so I emailed Apogee who replied that it had been despatched on 4th December.

With just over a week to go before Christmas, I emailed George Broussard at Apogee to ask if they could email the files to me if the package hadn't arrived by the 21st. He replied, saying he would sort it out for me.

We were relieved when the package did arrive on the 19th, bearing an "inspected by customs" sticker. But we were surprised the following day to receive a Federal Express parcel from Apogee containing another copy of the game.

The cost of the FedEx service must have been close to the price I paid Apogee for the game, and I take my hat off to them for pulling out all the stops to help make my son's Christmas.

My thanks go to George and his team at Apogee, and I sincerely wish them a prosperous New Year.

**Jeff Yates**
**yatesj@sequent.com**

### Bargain board blues

There are many of us trying our hardest, with very limited resources, to keep pace with the rest of the field in the increasingly expensive love affair with PCs.

We read all the magazines (particularly *PCW*) to learn about the latest tips and innovations. We pore over the ads, ever hopeful of finding that CD-ROM or video card which gives us the justification we need to tell our wives: "I *have* to get one because I can't run any more software on what I've got. And it's such a fantastic bargain that I would be a fool to miss it."

But rather than buying those products which have been recommended by the magazine experts, we resort to buying those which are "compatible" or "lookalike", simply because they are a hell of a lot cheaper. Or are they?

Last August I was working in America for a while. During my stay, I visited a store selling PCs and peripherals for incredibly cheap prices.

I simply "had to have" an internal modem for my PC. There were some good prices on US Robotics gear, but still too high for me. Then I spied a Reveal PM500 internal modem for an amazing $60 (about £42). What a bargain. I had to have it. No choice. Even though I remember an article by *PCW*'s Barry Fox, warning of the dangers of buying PC equipment in the States. He was right.

Arriving home I inserted the board and tried to install the software, but the floppy disk was corrupt. Not to worry, though; I already had QuickLink II so I used that instead. And that was when I discovered the promised data compression was only software driven and, of course, I didn't have the software. Not only this, but I was having all kinds of problems trying to send faxes and connect to the Internet.

So I rang Reveal, in California, and told the company my problems. It responded by telling me that I probably didn't have the board set up correctly; another disk would be sent to me with the software.

That was back in September. The software never arrived, despite my numerous emails and contacting Reveal through its CompuServe forum. The store where I bought the board didn't care about me and the manufacturer of the board didn't seem bothered, either.

Now, the only real solution for me is to throw the Reveal internal modem into the canal and buy a modem from a reputable manufacturer. But then again, I may just have to look around for another bargain. Well, you've got to, haven't you?

**Steve Dodson**
**Milton Keynes**

## OS/2 heaven

I take three computing magazines, including *PCW*, on a regular basis and I read many others casually.

It is frightening to see how the power of the almighty Gates dollar can bamboozle so many people — not only the generally unaware PC-owning public but also supposedly clued-up computer journalists — into thinking that Windows 95 is the best thing since the invention of the flying toaster.

I have just been reading the correspondence in your Letters pages (*PCW* November 95) headed "Focus on Windows 95". It is true that IBM's marketing strategy, as far as OS/2 is concerned, has left a lot to be desired. However, anyone who has had the courage to ignore the Microsoft siren, purchase Warp and download from the Internet some of the uncrashable native OS/2 shareware apps, will think they are in heaven.

By today's reckoning my hardware is prehistoric: a 386 SX25 Commodore with 8Mb RAM, 200Mb HD and external 14400 modem. But I can, and do, quite happily format a floppy, receive a fax and write a letter on IBM Works, simultaneously.

My point is that although OS/2 native apps may be in short supply, those which are being written are superb. With IBM's acquisition of Lotus I forecast a burgeoning of the supply, which together with OS/2's mature and virtually bug-free code must pose a significant threat to Microsoft's virtually complete PC software hegemony.

One does hope of course that the current IBM management have learnt not to hide their light under a bushel. If they know what's good for them, they will have learnt to be up-front about the fact that they have the best-by-far practical PC operating system in the world. I would also like to add that my only connection with IBM is as a customer.

**Peter Rodriguez**
**Auckland**
**New Zealand**

## Paper tiger

Joanna Scott's news item (*PCW* January) gives the impression that CD-ROMs will save trees, stating that the "coming 4.7Gb high-density CD would save 78 trees". Does she have a printer connected to her computer?

As a PC user since the days when a mouse was something the cat brought in, I feel confident in saying that the PC is responsible for more "tree deaths" than any other 20th century invention.

I can remember the predictions that computers would lead to a paperless society; what a joke! The real truth is that people still like to read hard copy. The proof of this is in *PCW*'s own sales: readers prefer paper to cathode ray tubes when it comes to permanent records.

**Terry P Byatt**
**terry@byatt.demon.co.uk**

## Report on service providers

One feature of particular value in *PCW* is the hardware reviews. These make a solid attempt to assess and report the various attributes of products in cold, hard, numerical terms, and then complement this with textual interpretation of the numbers.

It seems to me that a similar approach could usefully be applied to reviews of Internet access providers.

I have seen tables quoting the bandwidth of their Internet feeds, the number and highest speed of the modems they own, the number of PoPs they have, and the cost per month of subscription. But in my experience, these are poor predictors of the level of service we can expect from a service provider.

What I want from my service provider are these core functions:

1. When I call it, I want it to answer — every time.
2. When it answers, I want it to connect and log me in successfully — every time.
3. When I am logged in, I want to be able to download data (newsnet articles, Web pages or ftp data) at a speed limited only by my equipment, until I log out.

Knowing that "Provider X" has many high-speed modems and hefty Internet feeds might be taken to imply that I am likely to get excellent service from it. This may well be an invalid assumption, mainly because the loading of that equipment is not taken into consideration.

I am sure that many of your readers would find this data invaluable, and that (in the long term) providers would be encouraged to keep their service levels ahead of the growth curve, instead of behind it.

**Chris Wesley**
**(email address witheld by request)**

## Support for LCD

I was surprised that Simon Rockman considered the Opti LCD desk monitor to be a "waste of money and desk space" (First Impressions, *PCW* January 95).

I use a Datalux monitor which is very similar and, for me, it has four main advantages over the traditional Cathode Ray Tube monitor:

1. Bulk — the screen occupies only a few inches of desk space.
2. Portability — I can easily lift it out of the way to clear my desk of equipment when the

*The Opti LCD has advantages over CRT*

## Hindsight

**15 years ago, March 1981**

When the power is switched off, any program stored within most computers is lost. For this reason — as well as for those occasions when the program bombs — all computer users feel the need for some form of long-term storage of programs… Three methods are in current use — magnetic tape, paper tape and magnetic disk…

**Update**

Magnetic tape still gets used for backup but paper tape is now part of computer history.


**5 years ago, March 1991**

Microsoft reacted swiftly to an article in the Wall Street Journal which reported that OS/2 was being shelved in favour of Windows. Steve Ballmer, vice president of Microsoft's system software division, went as far as to declare outright that "OS/2 is not dead".

**Update**

OS/2 is still not dead, quite. But Microsoft has long since ceased any involvement with the product's development.

computer is not in use (the remainder of the computer being on the floor).
3. Appearance — it does not appear to my visitors that I have a TV set on my desk.
4. Eye strain — I find the LCD screen to be much kinder to my eyes than the glare that comes from a CRT.

I take the view that flat-screen monitors will eventually replace CRT monitors entirely. Obviously Simon Rockman does not agree — neither did the producer of the film *Blade Runner*, who used CRT monitors throughout the film despite it having been set many years into the future.

**Jeremy Gordon**
**McDuck Software**

### One man, one modem

I am one of those fortunate surfers who has the luxury of free local calls thanks to a Videotron-provided phone line and an Internet provider who connects to Videotron.

I know there are also many fortunate serfers *(sic)* who have their telephone bill paid by their company and don't have to dig into their own pocket (but I'm not talking about them). The problem is that such users have no incentive (other than sleep) to log off and free up a modem.

How long can Internet providers allow this to continue? Videotron may well gain an edge in the marketing stakes by providing free local calls at certain times, but it doesn't pay for the modems at the PoP, does it?

If it is to satisfy demand, an Internet provider needs the same number of modems as it has customers, with free telephone call access. Mine doesn't, and that proves my point.

One solution would be for the Internet provider to have a dedicated line for all its customers who provide their own remote modem.

The disadvantage of this is that the Internet provider must still pay for the telephone line. But are providers really going to complain if they have happy customers and don't have to pay for modems?

**Michael C Hicks**
**mike.hicks@private.nethead.co.uk**

***PCW replies:*** *In the States, where local phone calls are generally free, service providers charge by the minute. Eventually, service providers working with Videotron will have to go the same way. It's never going to be economic for a service provider to have one modem per customer.*

### The Word is out

What is the point of spending nearly £300 on version 6 or 7 of Word for Windows when one can still buy version 2 for £39.99 plus VAT(the price one currently pays to Morgan Computers)? If you buy Word 2 rather than Word 6 or 7, you also have an absolutely legitimate copy of a word processor that is *much* faster to load and work, requires less disk space for both program and files (WfW2.0 *.doc files are significantly smaller than their v6 counterparts), and has fewer bugs.

I have seen Word 6 working on my friend's computer, which is the same as mine, and the difference in speed between v2 and v6 is quite dramatic. I understand that Microsoft is aiming directly at big companies as its prime clients, but how about the individual?

Version 2 works absolutely fine under WfWG3.11, Windows 95 and OS/2 Warp, and for users who need to be "compatible" with Word 6 files there are:
(a) WordPad in Win95; and
(b) file convertors widely available on the Internet, CompuServe and the rest.

Where is the logic? There can be no excuse for not having a legitimate copy of v2 for a given price, but why should anybody pay more than six times the price for a software product which is much slower, puts unnecessary demands on hardware, and is overloaded with features that 99 percent of people never use?

Microsoft can call its newer versions "big progress", but as they are effectively worse than the previous version it just stimulates a new wave in software piracy — and nothing else.

**N Demidenko**
**Guildford, Surrey**

## Some service; still no smiles

### Gateway grouch

I read your article, "Some service; no smiles" (*PCW* February) with interest. You may want to add my story to the growing catalogue of Gateway horror stories.

I placed my order on 14th November and eight weeks later (10th January) eventually received my P5-133 Elite.

Early next week I have to go to the Far East for a short time, so I will hardly have had time to take my machine out of its box and test it within the 30-day return period; and I am not sure that I have received everything which should have been included.

I am very unhappy with Gateway's service and I would concur with the questions that you raise in your article about direct sellers.

I think that for me, the worst aspect of this is that I have not been able to get through to anyone at Gateway who has taken any responsibility, or shown any concern, for my order. This is a terrible way to run a telephone business. I have a telephone banking service which I would chuck at once if that organisation behaved like Gateway — but it doesn't.

I've had several disasters with my bank (for instance, a cheque paid in but lost) and it has come through with great credit: its staff has been professional, courteous and efficient in clearing up errors. Gateway has shown none of these qualities.

I rate Gateway absolutely zero in the customer service stakes.

**Henry Ellingworth**
**henry@fujitsu.co.uk**

### Time lapse

I found your article, "Some service; no smiles", to be both apt and timely. As you will see, I have been forced into having to put pen to paper as I do not have my PC at the moment — it is now (hopefully) on its way back to Time Computer Systems.

I received it just before Christmas and have since found many problems. The company's software helpline is exhorbitantly costly and you are lucky if you can get a ringing tone rather than an engaged tone. The customer services department supposedly has 34 lines: but just try getting one — when you do, it will ring and ring until it cuts you off by its own volition. You are then back to square one.

Hardware support will keep you waiting for 20 minutes on average and then you learn that if it is a problem remotely connected with software, "sorry, you must call the software line". You cannot talk to the manager of the technical department as he hides behind a "mail only contact" parapet. When a pick-up is promised for your PC, it does not happen and you are back to the frustrating loop of trying to contact Time customer services.

Is mine a common complaint? If so, please print a warning that by buying direct you may be opening yourself to potential stomach ulcers and heart failure because certain companies cannot support their sales. Please do not print my name and address as I would like to get my PC back in an operational state!

**(Name and address witheld by request)**

# First Impressions


First Impressions includes the irresistible "Gadgets" selection on page 57. Highlights include a Panther Premiere to pounce on; a new PagePlus for home and office DTPeople; the Internet-ready Integra and the similar Z-Station PCs. Take a new direction in life with GPS mapping; or have hours of fun with the Sugar Men Again… sorry, we mean Anagram Genius.

## Contents



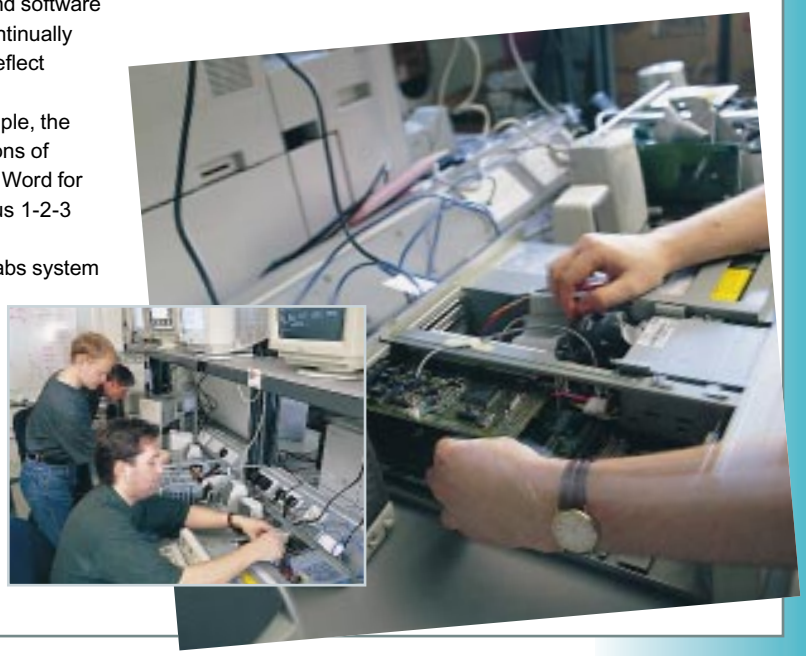
## VNU European Labs

VNU Labs tests cover every kind of hardware and software including PC hardware, printers, network products, modems and software applications. The tests are continually developed and enhanced to reflect hardware and software developments.

Our tests closely simulate real-world use. For example, the suite of PC hardware benchtests uses complete versions of industry-standard applications like Microsoft Excel and Word for Windows, WordPerfect 6.0 (DOS and Windows), Lotus 1-2-3 version 3.4 (DOS) and FoxPro (Windows and DOS).

Application tests are the backbone of all the VNU Labs system evaluations but it's nearly impossible to pin an application result to a specific machine component. Only system-level tests (also known as low-level tests) can reliably tell the difference. VNU Labs' system-level test suite is called Euromark. The tests, which are mainly Windows-based, quickly size up a hard disk, sound card, motherboard, display adaptor and printer, and give individual and overall figures.

● To make them easy to read at a glance, all the graphs in *PCW* are now drawn so that the bigger the bar, the better the result. Normally we'll also include the original data we worked from: for example, the time in minutes and seconds to print a page in a comparative test of printers.



HARDWARE

# Panther Premiere

The Panther sports the brand new MI chip. With this price and performance, says Adele Dyer, Intel should watch its back.

The M1, or 6x86, from Cyrix has been awaited with baited breath for over a year. It was first announced in December 1994, and has only just come into full production. The chip, as one might expect, is targeted as a competitor to high-end Intel products but aims to span the divide and take on both the Pentium and Pentium Pro ranges. It will be available in 100MHz and 120MHz clock speeds.

Cyrix claims the performance of the 120MHz 6x86 will rival the P166 running 32-bit code under Windows 95. Unfortunately, the 100MHz machine Panther supplied arrived so close to our date of going to press we were unable to run our 32-bit tests. Consequently we based these initial conclusions on our regular 16-bit bench tests and the Doom 2 speed test. We will run 32-bit tests on the M1 shortly, comparing it to a range of chips including the Pentium Pro and the latest Pentiums.

One further claim by Cyrix is that the M1 will rival the Pentium Pro running 16-bit code. It is well known that Pentium Pros have a problem running 16-bit code — it effectively gets stalled in its multiple pipeline architecture and thus runs much slower than your average Pentium. The Cyrix architecture smooths out the problems of optimising both 16-bit and 32-bit code by using RISC architecture with two pipelines and an increased number of pipeline stages to avoid execution halts.

In the Windows 95 application tests, the 100MHz M1 was comparable to Intel P150s, even slightly outpacing them, but it was well behind them in the DOS application tests. In the Doom 2 test, the 100MHz M1 scored similarly to an average Intel P120; a slightly disappointing score. It is worth pointing out, however, that the 100MHz M1's score on Doom 2 was around double the average of the Pentium Pro's, indicating that it is a better all-rounder for those still wanting to run 16-bit applications.

We were quite happy with the overall performance of the Panther machine. We had initial problems with the BIOS, using first an old pre-production BIOS and then a full production version of the BIOS. Both versions produced some unexpected and serious errors when Windows 95 was booted for the second time. The BIOS made significant changes, putting the video card at a different address and altering the parallel port address from LPT1 to LPT2. As we were trying to connect the PC to the network via a Xircom parallel port adaptor, this was a major headache. However, a corrected version of the BIOS should be available by the time this issue of *PCW* is on sale.

The other parts of the machine were of a high standard. The motherboard was an Intel Elite. The M1 uses standard ZIF sockets, in this case Socket 7, making it easy to swap from one chip to another with only minor modifications. The 2Mb VideoLogic Grafixstar 700 card is one of the best on the market, while the hard drive is a 1.6 Gb Western Digital Caviar. The sound card and CD-ROM drive are both by Aztech. The CD is six-speed and the sound card with daughterboard offer wavetable and 3D sound. 16Mb of RAM were installed in two of the four SIMMs slots and there was 256Kb of pipeline burst cache.

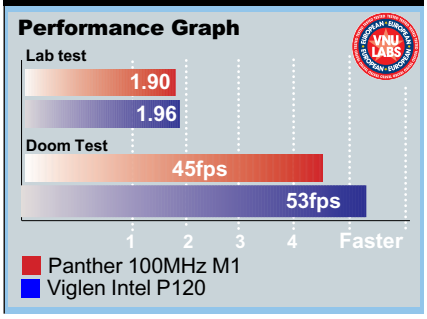
The 15in MicroScan 4v monitor by ADI could support 1024 x 768 at 72Hz, non-interlaced. The graphics card can drive 1024 x 768 in 65,536 colours (16-bit high colour), and in this mode the monitor coped well but looked better running at 800 x 600, which the graphics card can drive in 24-bit true colour.

We should stress that this review is very much a first look; on a price/performance ratio for everyday 16-bit Windows applications, however, the 100MHz M1 is competitively positioned. At a comparable price for a P120 and at about £300 less than a P150, it is a good contender for 16-bit applications. How it performs against the Pentium Pro and the Pentium on 32-bit applications may prove to be the crunch.

On first inspection it looks like it might give Intel a run for its money, and we look forward to testing the 120MHz version.

**Comparative**

**Performance Graph**




**PCW Details**

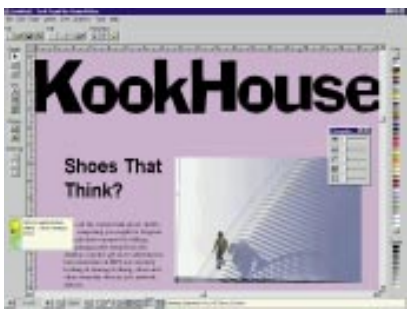
**Price** £1,999
**Contact** Panther 01442 253811. Fax 01442 250657
**Good Points** Good overall, and a well-specified machine.
**Bad Points** Brand new and hence unproven.
**Conclusion** Looks promising for a combination of 16 and 32-bit apps.

SOFTWARE

# Serif PagePlus Home/Office Edition

Fast and fun DTP, well adapted to Windows 95. Look no further, says PJ Fisher.

Serif seems a pretty good friend of Bill and his new OS as PagePlus has some rather familiar blue and white skyscape on the packaging and you are greeted with the question "What would you like to do today?" when you first launch.


**Above** *Bored with DTP? Serif has a game ready and waiting*

**Right** *The crisp, clean interface makes PagePlus a breeze*

First off, forget the manual — you just don't need it. This really is software that you can install (you will need 10Mb of disk space and 8Mb of RAM) and use almost immediately. Such is the simplicity of the interface and the ease in which you can get things done. Here is one of the neatest interfaces yet designed. I especially liked the rulers, which unlike many other DTP packages, actually clearly displayed where objects are on the page and their measurements. The colour picker resides on the right of the pasteboard, making it easy to pick both colours and shades just by clicking.

Serif has created a useful tool called the Change Bar. This consists of a number of slider bars which alter the shape and fill of boxes, the size, weight and leading of text, and even the colour and shading of pictures. Such methods of playing with type may make hardened typophiles cringe. For the rest of us however, it is a highly useful and easy way of setting headlines, and even body text if you are feeling adventurous.

A package nested inside PagePlus is WritePlus, a cut-down word processor that allows you to work directly on text placed inside documents. It includes a spellchecker, word count and search and replace. A similar tool is one of the best parts of PageMaker — it is good to see Serif adopting such a device.

Importing text is easy and it flows automatically into frames which can then be configured via the ChangeBar, allowing you to change columns on the fly. Text can be made to flow and link to other frames, although this is a fiddly process involving clicking on frames and buttons. However, text wrap is sophisticated for a product at this level. Another frustration was that text must be imported without any paragraph breaks, in effect as raw text — otherwise PagePlus has a tendency to insert huge irremovable gaps between paragraphs .

PagePlus has no capacity for user-defined text Styles. You are stuck with the default headline, body and header styles with no way of setting your own. If you want to format type you have to do it manually by applying through text dialogue boxes.

Another disappointment is the promised Internet design capabilities. You cannot, as is suggested, create Web pages with Serif. The deal is that you can create documents with hyperlinks that can then be saved as .PDF files and read in Adobe Acrobat Reader (supplied), which can now be embedded in Netscape 2.0.

But the strengths of PagePlus outweigh its glitches — it is a proven favourite which has been well adapted to Windows 95. Microsoft Publisher may have grown up to include some industrial strength features, but is still significantly more expensive than Serif. If you want fast, easy (fun even) desktop publishing look no further than this.

For the moment this remains a standalone package but Serif will undoubtedly include this version of PagePlus into its Win 95 office suite in the near future.

## PCW Details

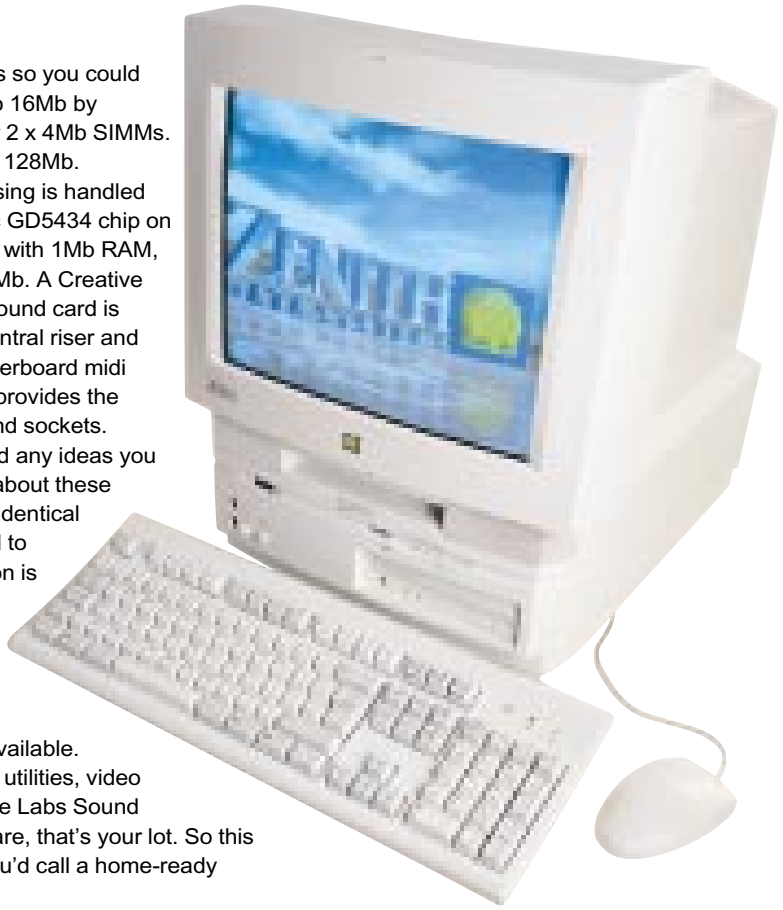
**Price** £49.95
**Contact** Serif UK 0115 942502

**Good Points** Fantastic value, can be picked up in minutes, superb online help, integration with Windows 95.
**Bad Points** No user-defined text styles, quirky text import, misleading Web capabilities.
**Conclusion** Perhaps not as many bells and whistles as Microsoft Publisher but limitations can be overcome. At this price (and probably cheaper) this is entry-level DTP that can't be beaten.

HARDWARE

# Zenith Z-Station LC *vs* Amstrad Integra PowerPro 90

Superior software bundling and true Internet-readiness make the Integra the obvious home PC choice, says Ken McMahon.



The Zenith Z-Station LC and the Amstrad Integra are two new additions to the growing band of home PCs which look and behave more like domestic appliances than office equipment. Amstrad has more experience in the consumer electronics market, Zenith is more associated with high-end business and specialist PC products.

Externally, there's not much to tell the two machines apart, in fact they look virtually identical. Both incorporate the monitor and processor unit in one portable box so you don't have to worry about too many trailing leads. Apart from the colour, the cabinet and chassis are identical, though the CRT on the Zenith is slightly flatter than the Amstrad.

Below the screen there's a row of four picture adjustment knobs and below that the front of the system unit houses two speakers, floppy and quad-speed CD-ROM, standby switch, volume control and mute switch and headphone and mic sockets.

When you take a look at the back of the machines, configuration differences become apparent. Both machines have two serial and one parallel ports, plus a joystick and sound in and out ports. Removing two screws allows you to slide the chassis out of the casing like a drawer.

The internal construction looks very similar, though some components differ and the Amstrad is a more powerful and highly specified machine.

The Amstrad sports a Pentium 90 processor fitted in a ZIF socket, while the Zenith has a P75. The other major difference is that two of the Amstrad's three ISA expansion slots are occupied with a modem card and a TV tuner/MPEG video card, while all three ISA slots on the Zenith are empty, though an MPEG card, TV tuner card and Fax modem card are available — both machines sport a spare PCI expansion slot. Both machines are fitted with a 520Mb hard disk and 8Mb RAM in two banks of 72-pin SIMMs. There are two spare SIMM slots so you could easily upgrade to 16Mb by inserting another 2 x 4Mb SIMMs. The maximum is 128Mb.

Video processing is handled by a Cirrus Logic GD5434 chip on the motherboard with 1Mb RAM, expandable to 2Mb. A Creative labs Vibra 16S sound card is mounted on a central riser and there is a daughterboard midi controller which provides the joystick and sound sockets.

Switch on, and any ideas you might have had about these machines being identical twins is soon laid to rest. The Z-station is preloaded with Windows for Workgroups 3.11, although a free upgrade to Windows 95 is available. Other than a few utilities, video clips and Creative Labs Sound Ensemble software, that's your lot. So this is hardly what you'd call a home-ready PC.

The Amstrad Integra is a total contrast. Pre-installed with Windows 95, it's brimming over with home office, multimedia, comms and games software. The list includes Quicken 4.0 accounts, WordPerfect Works, Encarta 95, Links 386, Descent Destination Saturn and Midisoft's Sound Impression.

There's also software for controlling the Dataflex 14,400 fax modem and the TV tuner and MPEG card. The comms software is Cyberworks, which offers a full suite of fax, conferencing, scheduling, call logging and voicemail facilities. Integravision software provides access to the TV tuner, allowing you to view TV in a window and capture single frames. You

can grab frames from a VCR or camcorder and play Video CDs via the the MPEG card. Most of the software functions of Integravision can be accessed from the handheld infrared remote controller, so you can use it as a TV or Video CD player from the comfort of your armchair.

When manufacturers say their PCs are Internet-ready, they usually mean they have a modem installed. This is bit like describing an egg as an an oven-ready chicken. The Integra is truly Internet-ready in the sense that you can plug it in, connect the lead from the modem card to your telephone socket and go online. It comes with a free 30-day trial subscription to Demon Internet and the software is preconfigured for logon to Demon, initially to an 0181 number, together with clear instructions on how to get started and switch to a local Point of Presence.

Documentation for the Integra is fairly good, though the manual could do with an introduction explaining the basics, and an index, or at least a table of contents. Otherwise it's very comprehensive and detailed. Documentation, like everything else supplied with the Zenith machine, was minimal and inadequate.

The Integra is everything a home PC should be, pre-configured and ready for most things a home user is likely to want, from domestic accounts to Internet access and games.

The Zenith is essentially the same machine in need of at least one pre-installed hardware expansion option and some applications software for the home user to get started with. Given the investment in time and money required to bring the Z-Station up to Integra specification, the Amstrad machine is a more attractive option.

**PCW** *Details*

**Amstrad Integra PowerPro 90**
**Price** £1,599
**Contact** Amstrad Direct 0800 338844

**Good Points** High hardware specification, lots of software, Internet-ready.
**Bad Points** The documentation could be better.
**Conclusion** One of the best home PCs around.

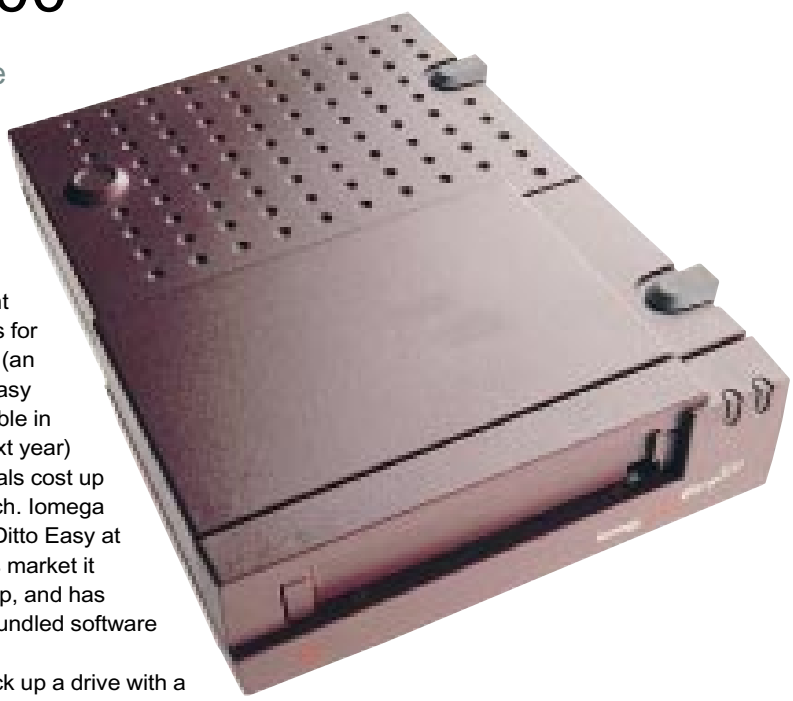
**Zenith Z-Station**
**Price** £1,299
**Contact** Zenith Information Centre 01756 702800

**Good Points** Nice design. Scope for expansion.
**Bad Points** Windows 3.11, lack of software, no documentation or help.
**Conclusion** Not one of the best home PCs around.

HARDWARE

# Iomega Ditto Easy 800

Clive Akass rates this quick and easy to use backup system.



Iomega has been a front runner in the market for "superfloppy" drives which take low-cost removable disks of 100Mb and more, so you may wonder why it (or indeed anyone) bothers with slow, sequential tape.

There are several reasons. A single tape can back up an entire hard disk; speed and random access are less important for backup and archiving tasks; and the cost per megabyte is still comparatively low. Also the tape industry, worried at being sidelined by the new storage technologies, is developing software to make tape drives function much more like standard ones.

Iomega's Ditto Easy 800 takes the new high-capacity Travan tapes which hold 400Mb of raw data, or 800Mb compressed. It will also read and write older QIC-80, 80XL, 80-XLF and QW-80 cartridges, of which a huge number are in use.

From the outside, it looks identical to Iomega's groundbreaking 100Mb Zip drive, except that the stylish case is red instead of blue; the list price of £149 is much the same too, though you are more likely to find the Ditto discounted.

There are other equivalent internal devices for the same price (an internal Ditto Easy won't be available in the UK until next year) but external rivals cost up to twice as much. Iomega is pitching the Ditto Easy at the same mass market it found for the Zip, and has designed the bundled software accordingly.

You can back up a drive with a single click of a mouse and scheduling regular backups is almost as easy. You have to poke around in the system files if you do not want the software to load automatically, however; too bad if you are a novice who has never heard of WIN.INI. The drive plugs into the parallel port, with a pass-through port for your printer, so there is no messing about with expansion slots.

**PCW** *Details*

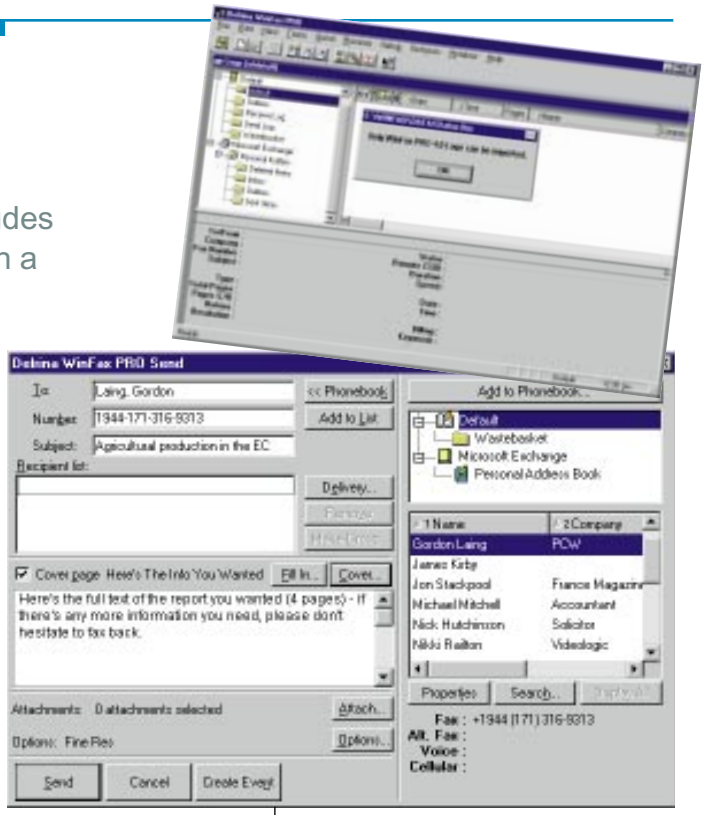
**Price** £149 list; £135 street
**Contact** Iomega 0800 898563

**Good Points** Easy to set up and use.
**Bad Points** Noisy accesses.
**Conclusion** Good buy if you need this class of device.

SOFTWARE

# WinFax Pro 7.0

WinFax Pro 7.0 is widely compatible and includes every feature you could dream of. Pity it's such a monster to install, says Tim Nott.




**Top** *The new look send/receive log integrates with Exchange but it won't import version 3.0 logs*
**Above** *You can by-pass the cover page and enter text from the "Send" dialogue*

WinFax enables a PC with a fax modem to send and receive faxes, and this is the Windows 95 version. The first eyebrow-raiser comes at installation. With all the trimmings, WinFax wants 26Mb of hard disk space, and a minimal install will set you back 16Mb. In comparison, version 4 (there was no 5 or 6) took 10Mb max and version 3, 6Mb.

According to the documentation, WinFax will replace any previous version installed and import the existing phone books and send/receive logs. There are a number of flaws here. I dual-boot between Windows 3.1 and Windows 95, and have version 3 of WinFax installed on the former but not the latter. Result; even though I installed the new version to a different drive, the existing version still got deleted, neatly removing my Windows 3.1 fax facilities. Worse was to come: it didn't, as promised, import the existing phone book and logs, which were now also inaccessible from Windows 3.1.

Pausing only to note that although I'd sent and received just one page each, the "Uninstall" routine left behind half a megabyte of files, 16 Registry and five WIN.INI entries, I reinstalled both versions from their respective Windows platforms. To cut a very long story short, this time the old version wasn't detected and I also managed to import the old phone book manually. Attempting to import the version 3.0 log files (i.e. the lists of faxes sent and received) produced a message stating that "Only WinFax PRO 4.0 logs can be imported" — a shabby way to treat existing users.

Moving on to brighter things, there's a brand-new look and feel. WinFax 7 is both Windows 95 and MS Office compatible so there are similar menu layouts, customisable button bars, tooltips, "what's this?" help, and right-button menus.

The basics are much the same. You can send faxes directly through WinFax (and there's now a "Wizard" to help), with a huge range of decorative cover pages, or via the "Print" command from other applications. If you're in a hurry, you can now enter text straight into the "Send" dialogue without having to fill in a cover page. You can use the viewer to read and annotate faxes, and as before, use Optical Character Recognition to turn them into machine-readable text. A brief test on a single page found the new Xerox Textbridge technology was slower and less accurate than version 3's Omniscan. The test machine also seemed prone to General Protection Faults while using the Viewer.

The send and receive logs have changed considerably. You now get a window in three sections. The top is like Windows 95 Explorer, with a tree-like view of folders and their contents. Below this is a panel giving details of the selected event. You can create custom folders and drag events between them.

WinFax integrates with Microsoft Exchange — you can send email and access your Exchange (and other) address books, in and out boxes alongside your WinFax folders. You can't, however, copy items between the two. Furthermore, if you took the option to remove the native Microsoft Fax on installing WinFax, you will no longer be able to view faxes you sent or received via the former.

The Comm Bar provides a launcher for the various WinFax modules (or other Delrina products) and means you can receive faxes automatically without loading the main WinFax program. It can be docked at the top or bottom of the screen, float free, or be iconised in the "System Tray" beside the Windows 95 clock.

WinFax 7.0 boasts several technical improvements. New compression technology means that faxes are transmitted, it is claimed, up to 30 percent faster and there's improved rendering for grey-scale images. "Attachments" can be sent with a fax by dragging and dropping files — they don't have to be in a fax image format, so you can include sounds and video as well as text and pictures.

For power faxers, incoming faxes can be automatically forwarded to one or many destinations. Regular events, such as distributing a newsletter, can be automated. You can automatically print a copy of each outgoing fax and if you have a pager, you can be kept informed of incoming faxes when on the move.

## PCW Details

**Price** £99
**Contact** Delrina 0181 207 3163

**Good Points** Integrates with MS Exchange and other Delrina "CommSuite" products.
**Bad Points** Huge, won't import version 3 logs, caused GPFs on the test machine.
**Conclusion** Every feature a power-faxer could possibly need.

HARDWARE

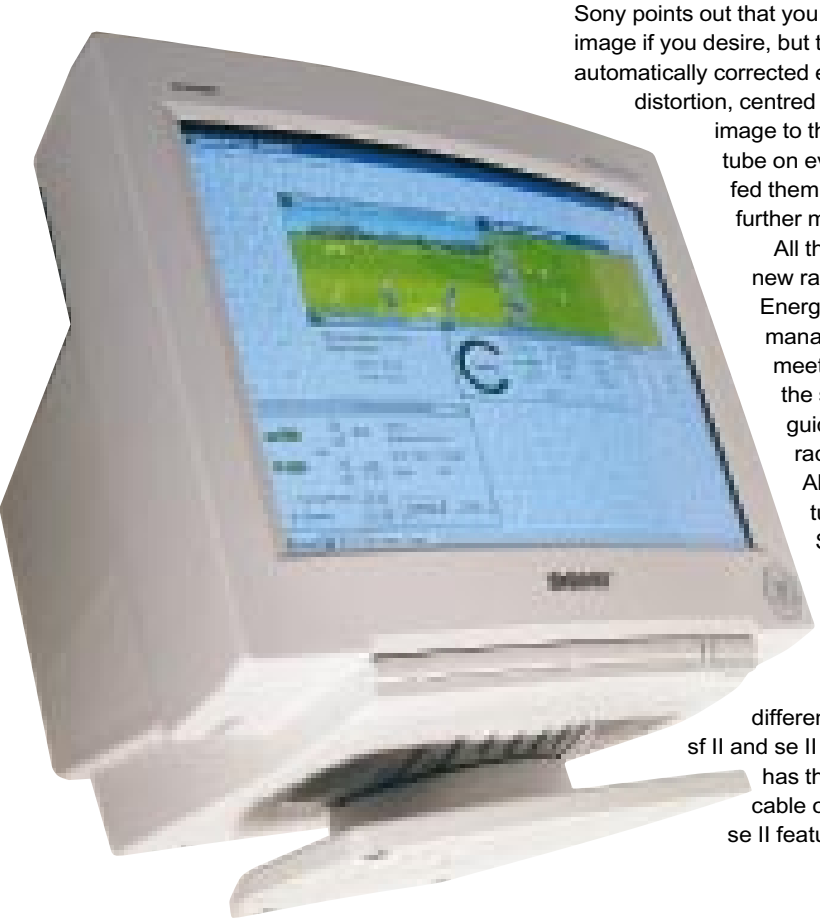
# Sony Multiscan 17se II and 17sf II

Sony's new range of monitors will be a sight for sore eyes, says Gordon Laing.

In the closing months of 1995, Sony unveiled six new monitors to suit every taste and pocket. They fit into four product ranges in ascending order of quality: entry level Multiscan sx, Multiscan sf II (formally sf), Multiscan se II (formally se), and Multiscan sh at the extreme high end.

In our last monitor group test we featured several sf and se models which won commendations left, right and centre. Now we're looking at the new and improved 17in sf II and se II models (the latter pictured here).

The previous se and sf models were pretty special, leaving Sony with only a few new features to enhance its series II releases. Most obvious is support for the Display Data Channel, DDC, which allows the monitor to communicate its capabilities to the graphics card.



play display under Windows 95, optimised to the best combination the card and monitor can deliver together.

Making several appearances on recent monitors are on-screen controls, working in a similar way to that in which a modern television displays channel and volume adjustments. On-screen controls were sadly not present on the se and sf models last year, and make a welcome début on these new models.

Perhaps most impressive of all is Sony's third generation Digital Multiscan technology, which calculates its own settings rather than relying on preset memories for VGA. We fed both monitors a huge variety of signals from different video cards, trying all the common resolutions at a number of refresh rates. Each time, both monitors locked on and optimised the picture instantaneously. Sony points out that you can tweak the image if you desire, but the monitors automatically corrected every geometric distortion, centred and fitted the image to the edge of the tube on every signal we fed them, and required no further modification.

All the monitors in the new range also boast Energy Star power management and meet both MPR II and the stricter TCO guidelines on radiation emissions. All the Trinitron tubes used in Sony's monitors have anti-reflection coatings, reducing glare.

From here on, differences between the sf II and se II emerge. The sf II has the captive video cable of the sf, while the se II features two independent inputs from an HD15 D-SUB plug or a set of five BNCs, offering the flexibility of connecting two machines and switching between them. At work I have both my PC and Macintosh connected to the same monitor, which is convenient and saves space.

The sf II has a maximum horizontal scanning frequency of 65kHz, capable of a highest 1024 x 768 resolution, non-interlaced at 80Hz. The se II extends this to 85kHz, which will handle a maximum resolution of 1280 x 1024, non-interlaced at 80Hz.

In all modes, including the highest, both monitors performed superbly. Details were fantastically crisp and well focused; the overall image remained stable and did not discolour. The automatic geometry correction did its job perfectly, but those who wish to tweak have a few more options on the se II. In the same mode, the se II unsurprisingly boasted a better overall image, but the sf II was by no means poor.

Both cases are as small as they could be, with slim surrounds and fairly shallow depths. The sf II is slightly better looking with some of its controls featured on a lip at the lower right, while the se II is more old fashioned with a conventional row of buttons.

Now for the hard sell. The original 17sf had a recommended retail price (RRP) of £749, while the improved 17sf II represents particularly good value at the reduced price of £649. Those who require the higher resolutions and dual inputs will have to meet the 17se II's RRP of £949, down from the original 17se's tag of £1,025. Shop around and you'll find the closest comparisons in quality and price are to models from NEC. Both companies make brilliant monitors, and it's down to your personal preference for Trinitron or not. Do your eyes a favour and check them out; you won't be disappointed.

**PCW** *Details*

**Price** Multiscan 17sf II £649 (RRP); Multiscan 17se II £949 (RRP)
**Contact** Sony 0181 760 0500

**Good Points** Superb monitors, much improved.
**Bad Points** I really can't think of any.
**Conclusion** Buy one now.

SOFTWARE

# QuickView Plus

"Where have you been all my Win95 life?" Chris Cain asks QuickView Plus. It's simply brilliant and brilliantly simple.


*Quickly view almost any type of file with QuickView Plus*

When *PCW* tested the Beta version of Windows 95, one of our favourite features was a utility called QuickView. With this installed, files in a number of popular graphic and text formats could be viewed quickly without loading the parent application. When the final version of Win95 appeared, QuickView was still there, but surprisingly some of its functionality had been lost.

QuickView Plus from the Inso Corporation is designed to make up for Microsoft's apparent lack of vision. Supplied on two floppies, it increases QuickView's abilities to cope with over 200 different file formats. Formats supported include Microsoft Word, Ami Pro, MacWrite, .XLS, .EPS, .TIFF and .JPEG, plus other more obscure types like .PICT, Lotus Symphony, First Choice Spreadsheet and .WPG. The program can also deal with HyperText Markup Language (HTML), needed for development on the Internet, and various compression formats such as Zip, Uuencode and Unix .Z.

Installation takes just under five minutes and involves little more than a quick double click and a disk swap. Once this is finished, clicking any viewable file with the right hand mouse button brings up the option to display it. While viewing you can scroll around, copy data to the clipboard, search for a string, extract from archives and print. You can even turn images into Windows wallpaper, which saves all that tedious messing around with art packages. The one thing you can't do is edit data directly, but the appropriate application can be launched at the touch of a button. If you choose, QuickView Plus can also attach itself as an option to the Explorer and other applications.

There's not much else you can say about QuickView Plus except that it's brilliantly simple and simply brilliant. The only thing that could improve it would be a file conversion facility.

**PCW** *Details*

**Price** £39
**Contact** Contempary Software 0172 7812812

**Good Points** Simple to use, quick and handy. Cheap.
**Bad Points** Previews only with Corel CDR files.
**Conclusion** A must for anyone running Windows 95.

HARDWARE

# MicroSpeed Keyboard Deluxe for Windows

The MicroSpeed Keyboard Deluxe may mean you can kiss bye-bye to RSI, says Gordon Laing.

Yes, it's a standalone keyboard review, and the first in *PCW* for a long, long time. Keyboards aren't our usual fodder in the *First Impressions* section, since they tend to fall into the "supplied with my PC, and even if it's rubbish, I'm not going to do anything about it" camp. There's also the fact that they're incredibly subjective things. One person's desirable click is another's RSI; while squidgyness may be heaven to some, but hell to others.

Despite all that, here's a review of a keyboard I think is brilliant. MicroSpeed, a company known for its ergonomic keyboards and pointing devices, jumped on the Windows 95 bandwagon and released this, the Keyboard Deluxe. I say "bandwagon" because it features three additional keys; one nestling between the left CTRL and ALT buttons, and the other two between the right ALT GR and CTRL keys.

Pressing the Windows key, duplicated on both sides, has the same effect as clicking the Windows 95 Start button; while pressing the right hand only menu button mirrors a Win95 right mouse click. Certain key combinations access a variety of Win95 or 3x functions. To be honest I've not bothered with these facilities so far, but I'm not holding that against MicroSpeed.

Yes, forgiveness and understanding all round since this is the best PC keyboard I've ever laid hands on. The very best *ever*, in my opinion, is Apple's old extended Macintosh keyboard, found in editorial production departments worldwide, for around £150.

MicroSpeed's keyboard has a cushioning feel, aiding hard tappers like myself, without eliminating feedback through over-squidgyness. Okay, it sounds like madness, but a few months back when my wrists felt like seizing up, salvation was more than partly due to this beauty.

You want my anti-RSI advice? Sort out your posture, workstation ergonomics, and buy this keyboard. It worked for me — and my typing speed has even increased!

**PCW** *Details*

**Price** £44
**Contact** MicroSpeed 0171 720 0592

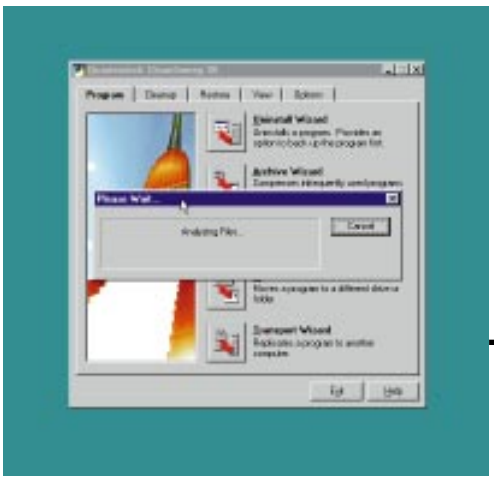
**Good Points** Great feel, and not overly large.
**Bad Points** Windows 95 keys not much use.
**Conclusion** Try it, then buy it.

SOFTWARE

# Quarterdeck Cleansweep 95

It's what we've been waiting for, and Windows 95 has made it a necessity. Paul Begg reviews the first installer.

If you were quick to upgrade to Windows 95 and failed to do even basic housekeeping chores, you may now be wondering where all your hard disk space has gone. The probable answer is that some of it is occupied by loads of files that you no longer need.



Windows 3.1 itself will have left DOS and Windows device drivers, .INI files, .DLLs, fonts, screen savers, and wallpaper that you don't want and which just sit there, anonymously, behind meaningless file names.

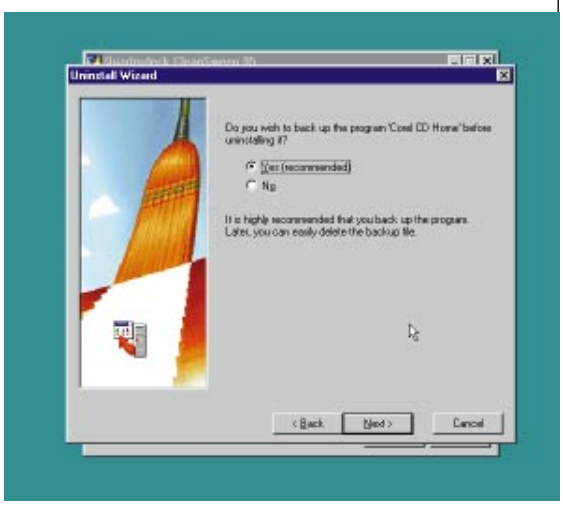
Never will an uninstaller have been so needed: especially if you have upgraded to some Windows 95 software and tried out the ton and a half of Windows 95 shareware that's been weighing down magazine cover discs for the last few months.

By now, you'll no doubt have megabytes of detritus on your hard disk and the sad thing is that Windows 3.1 uninstallers won't work well (or, in some cases not at all) with Windows 95. Among other things, they are unable to recognise long file names and invariably fail to recognise program groups nested within other program groups, flagging them as orphaned programs for deletion.

Curiously, few of the uninstaller companies seem to have been geared for Windows 95. All the companies are working on a 95 version — and by the time you read this, some will have hit the shelves — but first off the mark was Quarterdeck with CleanSweep 95. It's a nice package, it works with Windows 3.1 and Windows NT, as well as 95, and it's simple to use. Also, providing you back up your deletions, CleanSweep is safe. And it is surprising how much lost space you can claw back — I managed to get 11Mb from chucking out redundant .DLLs.

The opening screen has five tabbed cards: Program, Cleanup, Restore, View, and Options.

**Left** *Analysing my file; note the tabbed sections*
**Below** *Always back up. It's better to be safe than sorry*




Program gives you access to five wizards to take you safely, step-by-step, through uninstalling a program, compressing a rarely used program, creating a compressed backup, moving a program to a different folder or even to a second hard drive, or transporting and replicating a program to another computer.

Cleanup has the Duplicate File Finder, Redundant DLL Finder, Unused File Type Finder, Low File Usage Finder and Orphan Finder, while the Restore option lets you undo mistakes and put files back into their original locations. View lets you view a text file of every action performed by CleanSweep, view how much disk space you have retrieved, and view how much space each folder on your system occupies. Finally, Options lets you configure CleanSweep to run the way you want.

CleanSweep comes with two modules: the Install Monitor and the Usage Monitor. I've been waiting for something like the Install Monitor to turn up in a commercial package for a long time. Very simply, the install monitor watches everything that happens when a program is installed and keeps a text log which you can consult. You can use this to perform manual deletions, but the idea is that CleanSweep uses the monitor to undo everything it recorded as having been done during installation.

The Usage Monitor keeps track of the files you use most often. Over time you should be able to identify files that are never used and either delete them or back them up.

CleanSweep also includes a feature called Helper Technology. It's a database of information about popular Windows applications. Using the information in the database, CleanSweep 95 can effectively clean from a system, programs installed before CleanSweep itself. Quarterdeck constantly updates the helper library and you can download from Quarterdeck's Bulletin Board.

CleanSweep 95 emerges as a solid product, well able to carry out uninstallation and Application Management tasks, but I look forward to seeing what the competition have up their sleeves.

## PCW Details

**Price** £39.95. Registered users of CleanSweep 1.0 can upgrade for £19.95.
**Contact** Quarterdeck 01245 496699

**Good Points** Capable, with a good installation monitor.
**Bad Points** Nothing dramatic, but scope for improvement.
**Conclusion** A good buy.

HARDWARE

# Sharp ZR-5000

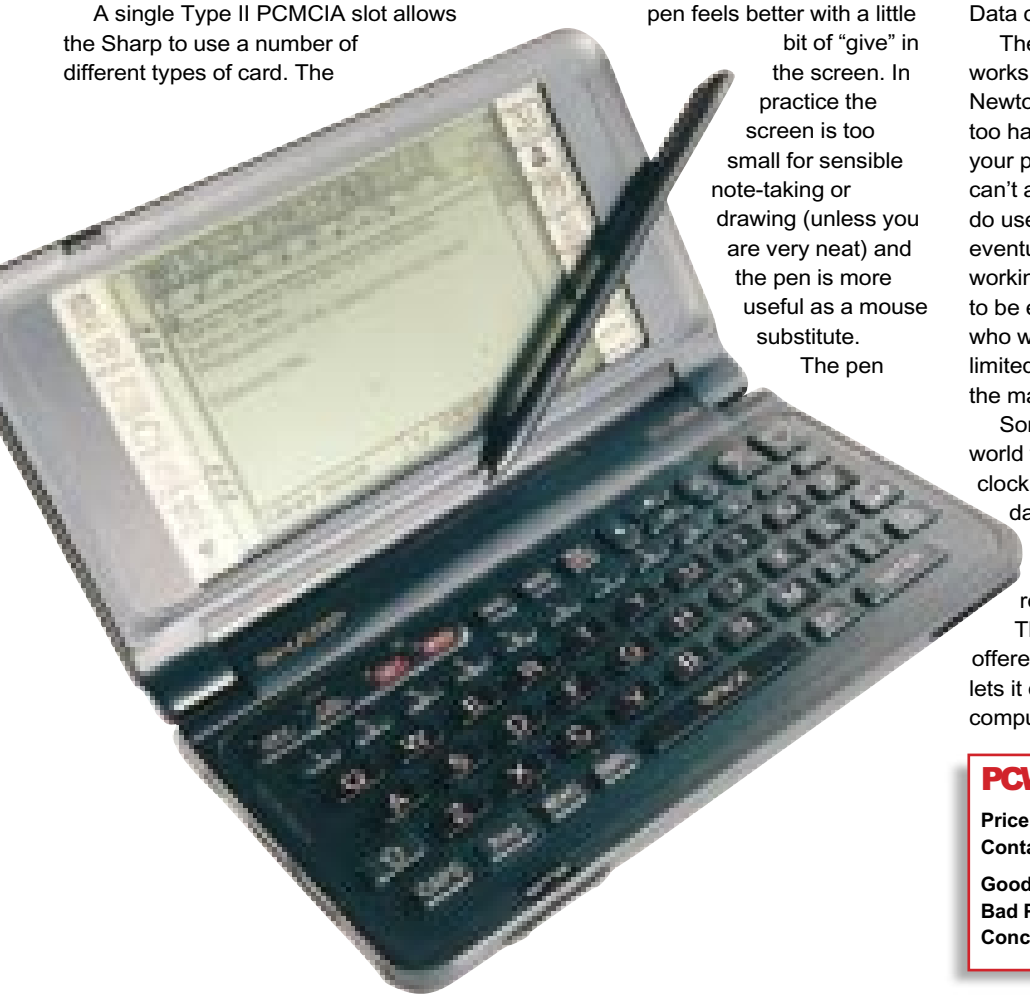
Impressive hardware and fancy features spell out fighting talk towards the Psion, says Simon Rockman. But the Sharp organiser still has some way to go.

The ZR-5000 is the latest in a long line of very successful pocket organisers from Sharp. While the Psion rules supreme in the UK, the American market is contended by Sharp and Hewlett-Packard.

The hardware is elegant: there is a touch-sensitive screen with a display resolution of 320 x 240 pixels, and 1Mb of RAM which, shared with the applications, leaves around 750Kb free. The display is not backlit — this would have had an unacceptably detrimental effect on the battery life — but it's still crisp under normal lighting. The two AA batteries give a typical life of 60 hours if you take it easy on the advanced features. These include infra-red to IRDA and to Sharp's own ASK specification.

A single Type II PCMCIA slot allows the Sharp to use a number of different types of card. The ability to take a modem or data card for a mobile phone has led Sharp to dub this device "The Communicator", although Sharp's own phone which is made by Ericsson won't have 9,600bps data for a while yet. Using the Nokia Cellular card takes too much power from the AAs so you have to resort to mains or an external battery pack which rather detracts from the portability of the whole thing. A serial cable provides a simple link to a PC and there is a custom fax/modem.

To make the most of the touch screen there is a pen, although this isn't strictly necessary since tapping the icons with a fingernail works just as well (although Sharp advises this may damage the screen). For drawing, the pen feels better with a little bit of "give" in the screen. In practice the screen is too small for sensible note-taking or drawing (unless you are very neat) and the pen is more useful as a mouse substitute.



The pen allows you to highlight text for cutting and pasting and to operate the Windows-like scroll bars. It works well enough but on a small screen the need for places to press and bars to scroll takes up a substantial proportion of the screen. The Calendar view is especially cluttered. There is no handwriting gewgaw but a note-taker allows you to scribble much as you would with a pen and paper. You'd probably be better off with the 2,000-year-old original in most cases.

Overall the hardware is excellent, but that is only part of the story. The software is feature-rich, perhaps too much so for a machine like this — there is a relational database and it is possible to link diary events to database entries. Data can be stored away using a filer.

The need to learn how the machine works makes it harder to use than the Newton or Psion. In many ways it tries too hard. You don't really need a GUI in your pocket and on a small screen you can't afford the space. No doubt if you do use the machine for a long time you eventually become acquainted with the workings of the system and it will prove to be excellent, but many of the people who will buy this sort of device will have limited interest in computers. Reading the manual will be a chore.

Some potential customers will be world travellers and for them the world clock will be a boon, but without the database of dialling codes it isn't as useful as that offered by the Psion. And that is pretty much a reflection of the whole machine. The hardware is better than that offered by the Psion but the package lets it down overall. The home grown computer is still the winner.

**PCW** *Details*

**Price** £399.99 (inc VAT)
**Contact** Sharp 0800 262958

**Good Points** Smart, sharp screen, IRDA.
**Bad Points** Fussy software.
**Conclusion** Psion should steal some ideas.

SOFTWARE

# Corel PrintHouse

Corel puts the DIY into DTP with PrintHouse, an easy graphics package with an impressive clipart library, says Adele Dyer.

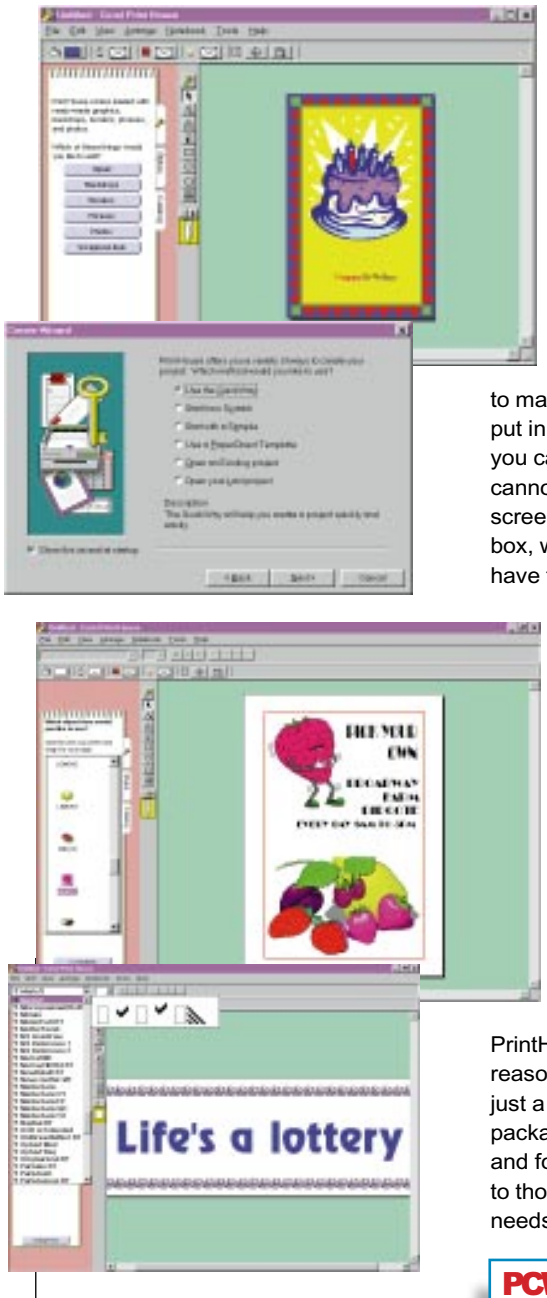
The Canada-based Corel Corporation is best known for its flagship graphics suite, CorelDraw, which has been around for the last six years and is still one of the most popular low end drawing packages. Corel PrintHouse finds its niche in the market as a very simple graphics and DTP package built for Windows 95. It is specifically designed to help the user quickly come up with documents and labels, where a little imagination and creativity is called for.

The cover of the box boasts a vast range of printed articles you can create using PrintHouse, including greetings cards, invitations, certificates, labels, envelopes, calendars, banners, business cards, letterheads, brochures and signs. To help you along there are 5,000 clipart images, 1,000 photos, over 900 sample documents and more than 100 fonts.

PrintHouse gives you templates and a compendium of decorating ideas. There are two basic routes to create what you want: you can either choose a complete document, by picking from a number of options chosen by PrintHouse; or you can just pick a basic template such as a greetings card, and use the clipart, photos and fonts to create your own work of art.

Whichever way you choose, you can design whatever you want, very quickly. You do not need to spend hours learning the package. Everything is clearly marked and if you begin as recommended with a step-through selection of a ready-made document, then you will be able to start designing your own documents within about ten minutes.

The design engine is similar to that used in CorelDraw 6, so if you are familiar with that package picking up PrintHouse will not pose any real difficulties. Clipart and photos can simply be dragged and dropped onto the page and then resized and placed. Pictures can also be overlaid, although you should be careful of the order in which you call them as the last to appear will automatically sit on top, even if you drag them away and replace them in the order in which you want them to lie.




*Fun documents are quick to create with pre-loaded templates, clipart and fonts*

The quantity of clipart and photos on offer is impressive, but its quality is a matter for debate. There is a wide range of useful drawings, including fancy letterings and flags. Personally, I prefer either formal drawings or cartoons and find it disappointing that so much clipart falls between these two stools. However there is an image here to illustrate almost any subject.

Unfortunately it is not so easy to manoeuvre text: PrintHouse lets you put in text wherever you click the cursor; you can draw a text box to help you, but cannot drag the full box around the screen. There is nothing like a Quark text box, which is desperately frustrating. You have to be extremely careful of where you put your words and which point size you use to avoid getting in a mess.

It is surprising that Corel has not made more use of text manipulation in what is basically a crossover graphics and DTP package. To compensate on those templates where text is expected to be put, there is better use of text boxes. On fax cover sheets and invitations, for example, you can adjust the ready-laid text and move it around the page.

Despite this annoyance, PrintHouse does let you create reasonably professional-looking results in just a few minutes. It is a no-nonsense package crammed with clipart, photos and fonts which will be extremely useful to those with limited graphics and DTP needs.

## PCW Details

**Price** £79
**Contact** Channel Market Makers 01703 814142

**Good Points** Easy to learn. Quick to create documents.
**Bad Points** Limited text manipulation.
**Conclusion** Good for the SoHo user with mixed graphics and DTP needs.

SOFTWARE

# Delrina Echo Lake

Budding writers might find Echo Lake the ideal modern muse, thinks Paul Begg.

**Right** *A comfortable working environment but the multimedia is too American*


**Left** *Echo Lake is a pleasant place to work*

It is a pity that diary keeping (in the mode of Pepys) has gone out of fashion. It's fun to recall old memories which bring the past alive for children, who relate more easily to history when it involves somebody they know. An account of an unremarkable picnic can be fascinating if it happened in the 1920s and everyone cycled through what were then leafy country lanes, to a lonely field that is now a housing estate.

The trouble is, it is often difficult to get to grips with writing. Even the most sophisticated word processor can be austere and cold, dulling the creative juices before even you start typing.

This is where Echo Lake steps in. It won't turn a poor writer into Shakespeare, but it does provide a warm and friendly environment and an armoury of memory joggers to inspire you. Echo Lake helps you lay out your prose, insert pictures, movies and sounds, and generally prepare the "manuscript" to be printed or saved in electronic form to share with others on diskette, or through online services.

The idea is that when the muse comes over you, you retire to the tranquillity of a log cabin at Echo Lake. Amid the heady aroma of the pine trees, your mind massaged by the gentle lapping of the lake and with a pot of nut brown tea to hand, you recall your memories. Of course, you'll have to put your imagination into overdrive to experience the pine trees, lake, and tea, but the software does create a comfortable and non-threatening literary environment.

Here, you create an interactive book; every member of the family can have one and the books can be password protected and hidden in a safe, away from prying eyes. Writing is done on a mini word processor with all the usual page and text formatting features, different type colours and a spellchecker. You can add multimedia to your story, too, recording family sounds, inserting scanned photographs from disc or Photo-CD, and even movies.

Echo Lake really comes into its own via the wealth of memory joggers. First, there's a tool called the Inspirator. This contains a couple of thousand prompts: historical events that might trigger memories ("What were you doing the day Kennedy was assassinated?"); a so-called "blast from the past" in the form of trivia questions ("What were the names the Teenage Mutant NInja Turtles?); and "Real Life Interviews" that ask questions such as "What was your first job?" and so on. As dumb as this may sound, these triggers actually work very effectively.

Another way of recalling memories is by using the Memory Starters feature. This is a kind of mini personal life database. You can store all the details of your life such as the places you worked and where you lived. Trying to fill in the blanks not only spurs the memory, it also makes you delve through those piles of old papers, diaries and letters. You might find yourself contacting relatives and friends, or even visiting newspaper and local history libraries.

An additional feature on the CD-ROM is a collection of hundreds of video clips, photos, sounds and clipart images. Here, though, I do have a complaint. Although Echo Lake has been Anglicised, this hasn't extended as far as the multimedia content. The pictures and movies include lots that is American, but little that is specifically British. No WWI photos, no Vera Lynne or Gracie Fields, no Tony Hancock or Goons, no movies of VE-Day celebrations, the Coronation or Winston Churchill's funeral. As good as the rest of the program is, these omissions let it down. The overall impression here is of a quick cosmetic job by the manufacturer, rather than a well thought out attempt to gear the product towards a British market.

Nevertheless, Echo Lake is an interesting and innovative program that could add a fresh zest to home computing.

## PCW Details

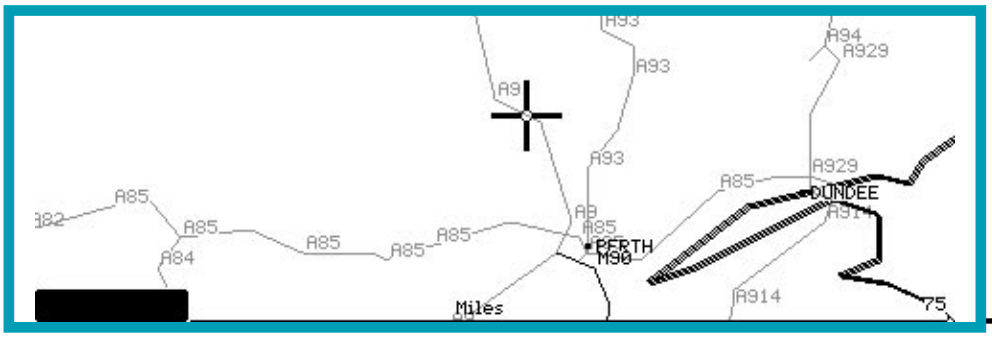
**Price** £99 (Inc VAT)
**Contact** Delrina UK 0181 207 3163

**Good Points** Innovative, fun to use, and could lead to a new and fascinating hobby for all the family.
**Bad Points** The multimedia hasn't been Anglicised.
**Conclusion** A good idea, well implemented. Worth trying to take a look at.

SOFTWARE

# GPS mapping for Psion Series 3a

Mark Whitehorn is totally seduced by the ultimate Bond movie gadget. By the way, it's also quite useful.




*Mapper and the Garmin in action, showing my car's location as North of Perth on the A9*

In the sixties, James Bond drove a gold Aston Martin loaded with goodies. I lusted after the car of course but mainly I wanted that moving map and the little blip of light which instantly located Bond and/or the evil opposition. A mere 30 years or so later, I've got a similar system actually working in my car. Even better, it is small enough to be portable.

The location information comes from a hand-held GPS (Global Positioning System) unit from Garmin. The display unit is a Psion 3a running Mapper. With a cable to connect the two, and a 3 Link cable, I'm in spy heaven.

GPS units can locate themselves typically to within 50 metres anywhere on the Earth's surface, making use of the data broadcast by satellites. The Garmin 45 is one such hand-held unit, powered by four AAs or an external DC supply. It has it's own LCD screen which can display your position in longitude and latitude. It also has a memory, so when you are mobile it can display your speed and current heading.

The GPS 45 can do lots of other clever tricks. For example, it allows you to set way-points on an outward journey and will then indicate course and distance so that you can navigate back to them. This is ideal for tricky offshore navigation or hill walking.

However, the GPS 45 is built for hand-held use so it only has a small LCD screen and lacks enough memory to store significant quantities of mapping information. The good news is that it can squirt the location information out through a serial link.

Mapper is shareware mapping software from Steve Litchfield. It shows all of the major towns, roads and other features in the UK. Steve provides the tools necessary for users to produce overlays which sit on top of the basic map. These overlays can contain virtually anything you desire. So, if you're a travelling salesman, you can build an overlay which shows the location and details of all your contacts.

Many overlays are of more general interest, and these are often released into the public domain by their constructors. Steve supplies over 40 (by a variety of authors) with Mapper so I can, at the press of a button, find all of the Novotel hotels, Happy Eaters, airfields and so on.

A truly remarkable property of shareware is that it can respond so rapidly to external changes (like cost-effective GPS units becoming available). Microsoft now owns Autoroute (both for the PC and the Psion) and in response to the question "When will Autoroute have GPS capabilities?", stated; "In the next release." This is less impressive when you discover that the next release is due in 18 months' time. Mapper has GPS capabilities now and while I was reviewing it Steve added a feature to calculate and constantly revise your ETA during journeys.

So, how does it all work? You install Mapper and plug the cable, that Steve supplies, into part of the Psion 3 Link cable, set the mapper to "GPS moving map" and, after a brief pause, a cross appears on the map showing your location. As you move, so does the cross and when it reaches the edge of the screen, the map automatically redraws with the cross centralised. The map can be zoomed, but even at highest resolution you will be looking at an area of 18 miles by about six. This sounds poor, but is fine for long distance navigation. Mapper takes up a mere 0.5Mb and it will run in about 100K of RAM.

Finally, there is Mapper for London, which shows more detail and will run in GPS mode, so in a car your passenger can navigate you through the streets (within the limitations that tall buildings impose on the satellite connections).

If you already own a Psion and 3 Link or a GPS unit, you are probably a gadget freak. You just have to treat yourself to Steve Litchfield's software and cable. Me? I've bought them already; all I need is the gold Aston Martin.

## PCW Details

**Prices** Mapper £14 on floppy disk; cable £35 (available for various GPS units); Garmin GPS 45 £325 (RRP), £275 (street); Psion Series 3a £230 to £400 (depending on memory)

**Contacts** Steve Litchfield (Mapper and cable) 01734 265081, or Web at http://ourworld.compuserve.com/homepages/slitchfield; Garmin 01794 519944; Psion 0171 258 7368

**Good Points** An invaluable aid to motoring navigation (much better than reams of maps) and it's fun to use.

**Bad Points** Remains as separate components: a cohesive package would be handier.

**Conclusion** More fun that anything else I have played with for the last year.

SOFTWARE

# TASKey Version 1.0 for Windows

TASKey 1.0 — where software meets transcendental meditation. Michael Eagleton discovers a new organisation/management program that might do more for you than a few sessions with the Maharishi.

There are not many programs that justify being put in your Windows start up directory but I have just added TASKey Version 1.0 for Windows to mine.

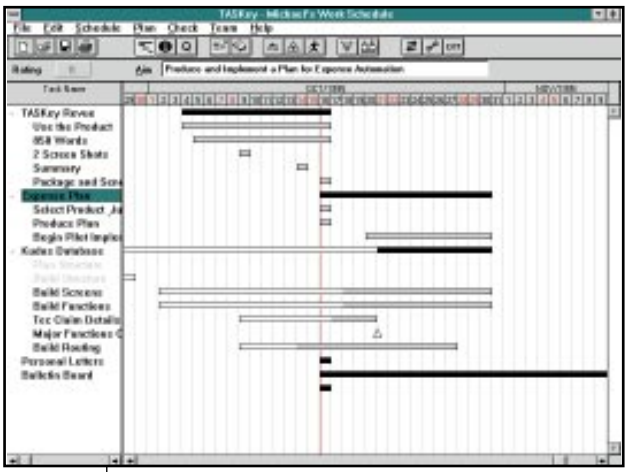
TASKey is more than a piece of software to schedule tasks, it's a philosophy. Its mantra of virtues is "To schedule, to plan, to check". The manual speaks of the "TASKey method'" and how to approach the software before turning on your computer. TASKey promises to take you by the hand and into the world of effective task completion.

Even before the software has been installed, TASKey is impressive. Its manual welcomes you and introduces you to the software and the way in which the TASKey method is implemented. It describes how the program is divided into three sections: a schedule screen, a plan screen and a check screen. It is wonderfully thorough in explaining the principles behind TASKey and the practical benefits.

Having loaded TASKey, the first thing to do is identify yourself: while TASKey is excellent for the individual to manage their own tasks, it also expands for use by groups of people concurrently. Although project management software allows a project manager to crack the whip for the individuals involved, TASKey allows individuals to contribute and to own tasks within a shared project.

Once personally identified, your tasks can be listed. On the schedule, screen tasks are entered to form tasks, parts of tasks and parts of parts of tasks. In a similar way to project management, the tasks are mapped out on a Gantt chart to describe their timeline. Adjusting the starts, ends, milestones, or degrees of completion is very simple. A whole schedule of tasks was entered in a few minutes.

A click takes you to the planning section, which prompted me for the aim of the Task I had entered. This section contains the description, objectives, actions, groups and individuals, and resources of a plan. All users receive the information needed to understand the meaning of each task. The first two sections of TASKey combine maximum functionality to manage tasks, with ease of use.



*Bar chart scheduling is easy to interpret, displaying structured tasks, sub-tasks and current status*

Another click takes you to the checking screen, allowing you to check a plan's completeness, workability and acceptability. There are seven types of Checking framework for leaders and individuals, for checking, reviewing and doing. Each type of framework has up to 41 questions designed to extract the exact status of the plan.

The questions are completed by setting their "importance" and allocating a measure of attainment. The "importance" reservoir is a clickable stacked bar, and "attainment" is a set of radio buttons with varying degrees of answer explained beside them. The questions are searching, yet simple to complete. They do not, however, apply to the task, they apply to the plan. This is a revelation. Here is a piece of expert systems software.

TASKey applies a rating from the questions for each plan and these are processed through a simulation model. It applies your results to the life-cycle of a plan: the initiating, sustaining and planning of tasks. Expert priorities include "communicate plan", "get information", and "allocate resources", sorted by expert consideration of necessity and personal importance rating.

TASKey displays these priorities: from "strengths and weaknesses" to "action priorities"; from individual tasks to shared tasks; or even by comparison between an alternative approach to the same task.

Informative review reports and tasks can be printed and communicated to groups, or can be for individual use.

TASKey comes in three packages: TASKey Personal, TASKey, for organisations across teams, and TASKey Plus, including team planning functions. It ran effortlessly on my 8Mb 486 DX2/66. Minimum hardware requirement is a 386 or better with 2Mb of RAM, plus a pointing device (which is essential). In a network setup or manager/secretary arrangement, its allocation and monitoring capabilities are ideal. TASKey is supported on MSN with it's own forum, as well.

So now for 15 minutes each day I start with this simple mantra: "Schedule, Plan, Check, Schedule, Plan, Check". I feel better in myself, and see tasks being identified more completely and completed more effectively.

## PCW Details

**Price** TASKey Personal £49; TASKey (10-user) £225; TASKey Plus (10-user) £325
**Contact** Key Computer Software 01270 613014

**Good Points** Ease of use, superb documentation, shareable.
**Bad Points** No flashing alarm bells for late items, it's reference only.
**Conclusion** Between organisers and project management software it's your key to task success.

SOFTWARE

# 120 Letters that Get Results

A must if you sue more than twice a week, says Michael Hewitt. Otherwise this is just the ultimate novelty software.

I often come across programs which make me think: "Why do they bother?". Talking calendars and personal biorhythm plotters are cases in point. Sometimes I'm pleasantly surprised, and using the package actually turns out to be a life-enhancing experience. More often than not, however, first impressions are correct. In this case, gut-feeling told me that "120 Letters that Get Results" (from Which?) would disappoint.

Consumer problems are a continuing theme of modern life, states the blurb on the box. What with insurers failing to pay up and restaurant meals giving us salmonella, we're continually under assault from the rip-off merchants. "Don't get mad — get even!" is the underlying theme of this product. No; this isn't an exhortation to go out and put a brick through someone's window. Rather, you're supposed to send the miscreant in question an appropriate letter generated by the program, on receipt of which he screams "Mea culpa!" and surrenders.

The software is easy enough to use. Click on a letter icon and you're presented with a list of supposedly consumer-hostile organisations, from banks through to garages. Click on one, and it yields a list of all-too-familiar consumer complaints. In the case of garages, for instance, you've got unsatisfactory servicing, excessive charging and damage to the vehicle while in the garage's care. Select one and the corresponding letter is generated, written in balls-aching legalese ("You were under a legal obligation to carry out the work… as laid down by the Supply of Goods and

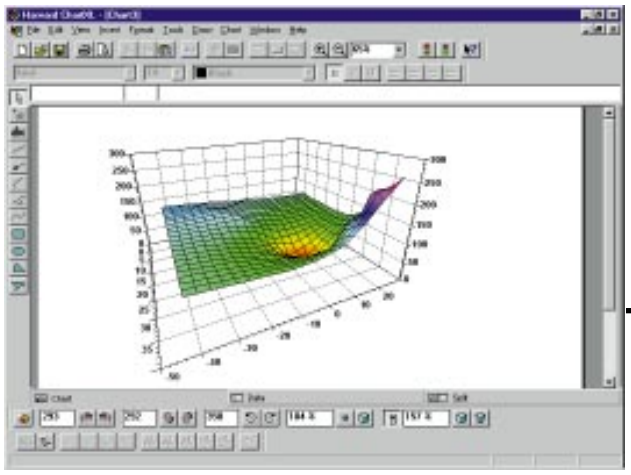

*Looks good, but is it worth the money?*

SOFTWARE

# Harvard ChartXL 2.0 for Windows

This graph/charting package has more ups than downs. It added a fun element to number crunching for Dylan Armbrust.

ChartXL 2.0 is Software Publishing's newest release that has been refined and enhanced beyond its first incarnation (ChartXL 1.0). It can be used as an add-on to other spreadsheets or you can choose the spreadsheet included with ChartXL. Either way, you'll find its capabilities are extensive. It can import Lotus 1-2-3, Excel, DIF or DAT files for its data set or you can choose to create one with ChartXL's native spreadsheet function. It isn't as fancy as, say, Excel's but it can hold up to 255 tables (worksheets) in a single spreadsheet.



*ChartXL 2.0 offers complex and colourful 3D graphing like this surface chart*

This version of ChartXL offers 310 graphs (almost double that of version 1.0) and styles are divided into three categories: business, statistical and technical. The chart gallery gives you a wide choice of 2D or 3D graphs ranging from a simple bar chart to the complex parametric surface chart. There is also a Formula Visualiser, with built-in calculator, for creating your own 2D or 3D charts.

In addition, there is the added element of OLE (Object Linking and Embedding). ChartXL 2.0 allows you to import, or drop and drag objects from other applications into your chart so you can have pictures, sound or video files embedded in your document without fuss. The program also allows you to have a permanent link to the source

Services Act 1982.") and with blanks so you can fill in the exact details of the misdemeanour. In addition, there are hypertext links explaining the finer legal points.

So what's the problem? This is software for software's sake. There's nothing in here that couldn't be better accommodated (more cheaply) in paperback book format. True, you'd then have to go to the effort of re-keying the letter, but how many people do you usually sue in a week? Anyway, I daresay crooked retailers are already working on a counter-program — their Patriot Missile to 120 Letters' Scud. So if you're interested, you'd best go out and buy, as quickly as possible.

**PCW Details**

**Price** £24.99
**Contact** Which? Software 0800 252100

**Good Points** Looks good. Very easy to use.
**Bad Points** The price.
**Conclusion** Unless they discount this to a tenner, go to your Citizens' Advice Bureau instead.

spreadsheet, allowing instant changes to be reflected in the chart as long as both applications are open.

And if you like to have a little fun while crunching your numbers you can use the Rotate Toolbar. This feature lets you rotate your graph a full 360 degrees on both the X and Y axes. As well as this, you can adjust the perspective of your view or shrink and enlarge the image. Printing the spreadsheet, or chart, is not difficult provided you have a reasonable printer to handle the graphic output.

The system requirements are a 486 or higher with a minimum of 8Mb of RAM and 18Mb of hard disk space. It runs under Windows 95, Windows 3.1x or Windows NT and can be installed via CD-ROM or 3.5in disks.

**PCW Details**

**Price** £149 (RRP)
**Contact** Software Publishing 01344 867100

**Good Points** More graphs, and offers full 360 degree viewing.
**Bad Points** Has a bare-bones spreadsheet program.
**Conclusion** A solid program that's versatile and easy to use

SOFTWARE

# Anagram Genius

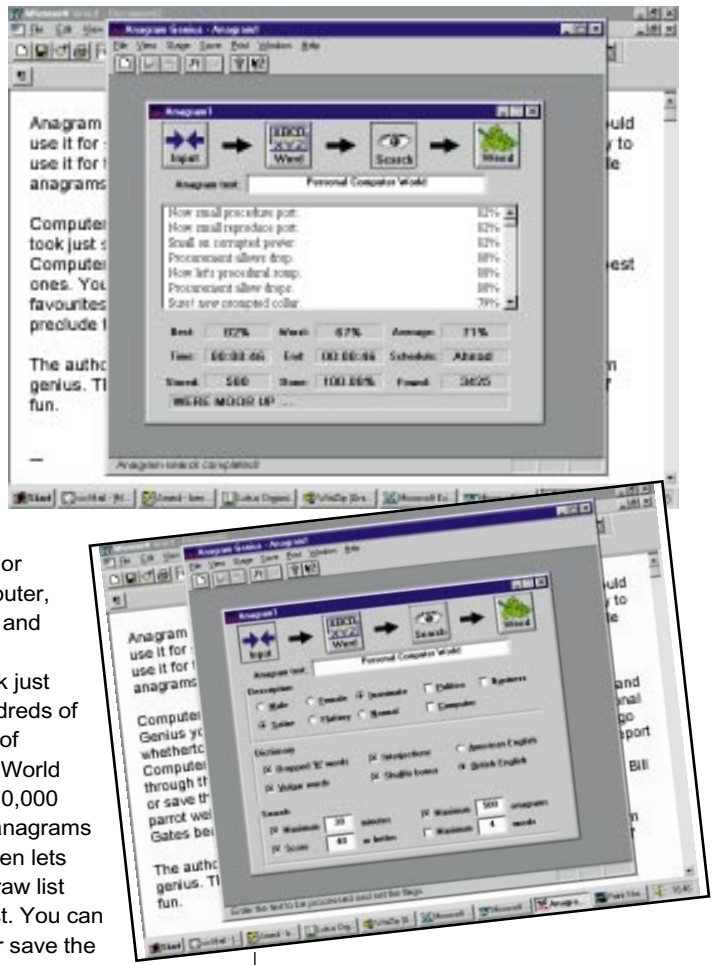
Completely useless and utterly irresistible, says Ben Tisdall. A must for the person who has everything.

Anagram Genius is devoted to creating anagrams. You could use it for solving crosswords or for playing scrabble but most people are likely to use it for turning names, words and phrases into amusing, alarming, rude or clever anagrams.

Personal computers are ideally suited to the number crunching needed to create anagrams. To use Anagram Genius you just type in your source text, choose English or American English and whether you want a male or female bias, flattery or satire, politics, computer, business or normal, and then press Search.

The program took just seconds to find hundreds of accurate anagrams of Personal Computer World from its Lexicon of 80,000 words. It ranks the anagrams it finds for quality, then lets you go through the raw list and pick out the best. You can then print a report or save the results on disk as a text file. The best from *PCW*'s name included: "composed parrot well run", "reproduce small worn pot" and "preclude tomorrow's plan". Bill Gates becomes "legal bits" or "it begs all".

The author, 26-year-old William Tunstall-Pedoe, has been refining Anagram Genius for seven years. The result is a program that's of very little practical use but nevertheless a lot of fun: at the price, it's cheap enough to buy for that reason alone. Tunstall-Pedoe has also written an illustrated book, published by Coronet, containing the best anagrams he's managed to unearth. This includes such gems as "I'm palace balls worker" (Camilla Parker-Bowles) and "Manure plot "(Paul Merton).



"Sugar men again"... *Anagram Genius could be addictive*

**PCW Details**

**Price** £19.99; book £4.99
**Contact** Genius 2000 Software
0151 356 8000. Fax 0151 357 2813.
Web http://www.demon.co.uk/genius/

**Good Points** A lot of fun.
**Bad Points** Not much practical use.
**Conclusion** I'm a pirating fragment overhead (*The definitive anagram program*).

## GPS mapping for Psion Series 3a

There was a time when every gadget fanatic yearned for James Bond's in-car navigation system. That fantasy is now a reality for anyone with a Psion Series 3a. Steve Litchfield has done the right thing by making up cables to connect the ubiquitous Series 3a to a variety of Global Positioning System (GSP) devices. Using Litchfield's Mapper software, you too can have a portable navigation gadget complete with a big cross to mark your spot. Those special agents will never catch you now. See page 76 for a full review.
Mapper software on floppy disk **£14**, and cable to GPS unit **£35**, from Steve Litchfield on **01734 265081**.
The Garmin GPS 45 unit pictured here **£325** from Garmin on **01794 519944**

## Interlink DeskStick

Nipples are pointing devices which control your cursor's position with a short, firm wiggle of your fingertip; the harder you press, the faster the cursor moves. Found wedged into many notebook keyboards, Interlink has brought the nipple to the desktop by fitting it into a trackball-type case, with two large buttons and a comfy space to rest your wrist.
Price **£49.95** from **Capitol** on **0181 569 9958**

## Logitech PageScan Colour

Banish those flatbed blues with this cute, all singing, all dancing PageScan Colour from Logitech. Not only does it scan colour sheets, but it comes off its moorings to scan books, magazines and anything else you need in electronic form. For a full look at this and seven other document scanners, see the feature on page 172.
Price **£299**. Contact **Logitech** on **01344 894300**

# Gadgets

PCW **Gadget** Photography by David Whyte

Long term tests

**PCW How You Can Contribute To The Long Term Tests Section**

We welcome contributions from readers for our Long Term Tests section. If you've been using a piece of hardware or software intensively for some time, just write a 450-word article (for hardware) or a 750-word piece with screenshot — GIF format — for software and send it on disk, in MS Word (Mac or PC) or ASCII format, to: The Editor, *Personal Computer World*, VNU House, 32-34 Broadwick Street, London W1A 2HG. Mark your envelope clearly "Long Term Tests". We'll pay for any contributions we use.

HARDWARE

6 MONTHS TEST

# IBM ThinkPad 360c

**Built to withstand nuclear assault and with some nice features, this machine is ideal for work on the go, says NA Nawab.**

*Solid, dependable and with a superb build quality, the ThinkPad 360c has proved a reliable workmate*

Six months ago, when confronted with the need to take my work over to a subsidiary company in Coventry, I asked my company's information services department for "a fast clone with lots of RAM". "Out of the question," was the reply. "We only buy IBM machines." Sure enough, a few weeks later I collected a ThinkPad 360c from the IS boys and rubbed my hands in anticipation of the hours ahead playing with my fast, expensive, top-of-the-range new toy. Unfortunately, our IS Department's idea of a "fast processor" was a 33MHz 486 with 8Mb of RAM — not exactly cutting edge. It's nonetheless a functional and relatively inexpensive machine.

The ThinkPad came with a smart carry case, AC adaptor, the usual manuals, and some free software including Lotus Organizer and Triton Technologies' Cosession Host. The latter consists of remote access software which can enable IBM Helpware staff to access and run diagnostic checks on your computer over the telephone line.

The computer itself exudes quality. IBM's reputation for building bomb-proof computers is certainly well founded in this case. My colleagues and I have put it through its paces, but it has coped very well with the rigours of travel. The TFT colour screen, though small, is of excellent quality with a clear, sharp picture and crisp colours. It's among the best screens I have seen on a portable.

The ThinkPad uses IBM's Trackpoint II cursor controller instead of the usual trackball. It took me no time at all to learn how to use it, but even now it feels just a bit awkward by comparison with a mouse. Over long periods in particular, a mouse puts less strain on my hand.

The keyboard is compact and has a nice feel to it. Accessing some of the keys was not as straightforward as it might have been, but only until I got used to the layout of the keyboard. As with the Trackpoint II device, I feel that using this little keyboard for long sessions puts more strain on my hands than a full-size one. Those who may face a similar problem and have won the jackpot on the National Lottery should consider IBM's 701c "Butterfly" series of portables.

I found the "suspend" feature particularly useful. This basically saves your workspace to the hard disk, bringing you back to exactly the same position when the computer is turned on again. It cuts in automatically when the batteries get low. The batteries themselves last fairly long and are charged very quickly.

Overall the ThinkPad is a solid, dependable machine which is ideal for the novice user. The only complaint I have is the performance, which is very sluggish. This is entirely due to the processor and in no way detracts from the build quality of the machine itself.

**PCW Verdict**

A well-built, reliable portable with some nice features.

**Price** The current entry level ThinkPad is the 345. It is a DX4/75, with 4Mb of RAM expandable to 20Mb, 540Mb hard disk and a 10.4in colour screen. It costs from £1520

**Contact** IBM 0345 727272

SOFTWARE

# Aldus PageMaker 4.0 for the PC

2 YEAR TEST

**After five years on the market this is still a versatile package, ideal for most DTP needs, says Marc Hindley.**

I've been a dedicated PageMaker user since version 3 was launched, and I've always thought it was brilliant. The major improvements in version 4 were 0.1-point increments in type size, text rotation — albeit in 90 degree turns — excellent manual kerning controls and good, if not brilliant, colour support.

Compared with version 5 or Quark XPress it has a number of limitations, but this is still a powerful publishing tool even after five years on the market (still available as PageMaker Classic for under £60) and two upgrades later.

I use it daily for newspaper production, and actually chose it in preference to PageMaker 5 because of its price and suitability. It can't separate full colour photographs, but since we only use about two a week we just output them from Photoshop to be stripped in at the film stage.

Speed-wise, it can perform at a terrific rate. One of the problems I had with version 3 was that it couldn't keep up with me — I use a lot of keyboard shortcuts and memorise the sequences for speed-formatting of text. I would recommend 8Mb of RAM for a serious power user to obtain full speed, but it still runs very well on 4Mb.

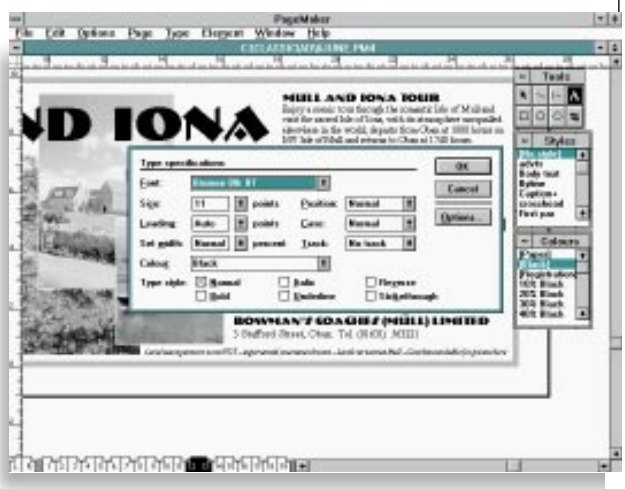
Up to 999 pages can be accommodated per file, but this is impractical for most purposes and it is possible to break documents down into smaller "linked" files for easier handling. Master pages can be set up with styles and automatic page numbers, which is great for long documents.

Inputting of text can happen three ways. Word processor files can be imported into your publication, you can key directly onto the page in a chosen typeface, or you can use the Story Editor, a nifty little built-in word processor which has an excellent spellchecker with good UK English.

Once on the page, unlike other DTP programs the text appears in "blocks" with handlebars at the top and bottom. The blocks can fit into predetermined column guides or stretch to span over any number of columns, or part columns. There are three types of flow control when arranging text — manual, semi-automatic, and automatic — which, although perhaps bewildering at first, brings significant control to the power user.

Under the Type menu there are sub-menus for font, type size, leading and alignment, but power users would be advised to use the Type Specs in the same sub-menu (keyboard access Ctrl-T). This dialogue allows viewing and editing of font, typesize, leading, width, case and track in one screen; this can easily be negotiated with the keyboard rather than the mouse. Because of a quirk of code, the font menu only shows up to 27 fonts under the font sub-menu, so this is an especially useful feature.

*PageMaker 4.0 still makes the headlines as a worthy news and production tool*



Paragraph specifications such as indents, spaces between paragraphs and alignment are easily altered from the Paragraph dialogue (Ctrl-M). This box also contains the leading method (under the Spacing dialogue) which defaults at Proportional. Vertical type spacing is difficult with this setting and Top of Caps is recommended for the best control, allowing lines to be accurately spaced by leading.

One-hundredth em kerning can be a godsend when working with long columns (such as in news and books) because it allows volume adjustment without the need for editing. A typical newspaper column of 400 words can easily be reduced or extended by convenient amounts using this simple kerning technique, and it doesn't show to the naked eye (I limit myself to a maximum of 2/100ths of an em either way). Text can also be compressed or expanded between 4 and 250 percent, but should be used with care. Headlines or body text should not be condensed to fit space in editorial, but for advertising or design purposes this is a good tool to have.

Text rotation is only in 90 degree increments, and once rotated it becomes fixed and non-editable. This can be tricky if you are trying to accurately place sideways text. Force justification, a feature which you will probably use rarely, works wonders when you do need it. By stretching the last line of a paragraph to the extremities of the text block, creative effects and spacing adjustments can be made.

PageMaker 4.0 is an able tool for weekly newspaper production, advertising design or book production. With a graphics package and an image editing package, you have all you need to produce anything from a business card to a book to a broadsheet newspaper. I've done all three.

**PCW Verdict**

Although limited compared to Quark XPress, PageMaker is a nice performer, both in terms of speed and finished results.

**Price** £515 — average street price for PageMaker v6. Upgrade from 4 to 6 — £95

**Contact** Adobe 0181 606 4000

# The Vision thing

**From writing apps for programmable calculators, to AlphaBlox via South Africa, Symantec and ESP, Michael Skok is the archetypal young entrepreneur — and he's British. Michael Hewitt meets a man with the Midas touch.**

Back in the late seventies, the then cult TV series *Not the Nine O' Clock News* carried a sketch in which top trade union leaders attempted to speak for 30 seconds without using the word "aspirations". First, Hugh Scanlon: "I tell you now, comrades, our members' aspirations" (Beep). Then Arthur Scargill: "If the miners listen to our advice, they will give us a massive "Yes" vote tomorrow. Their legitimate aspirations" (Beep). And so on, unto fraternal solidarity.

If they were doing that sketch today, they'd probably try to get the CEOs of major IT companies to speak for half a minute without using the word "vision". In days gone by, it was something you beheld while in a state of religious bliss. Now, luminaries in the computer business tend to get it as one of the side-effects of launching a new software product, particularly if it's object-orientated. Michael Skok is no exception:

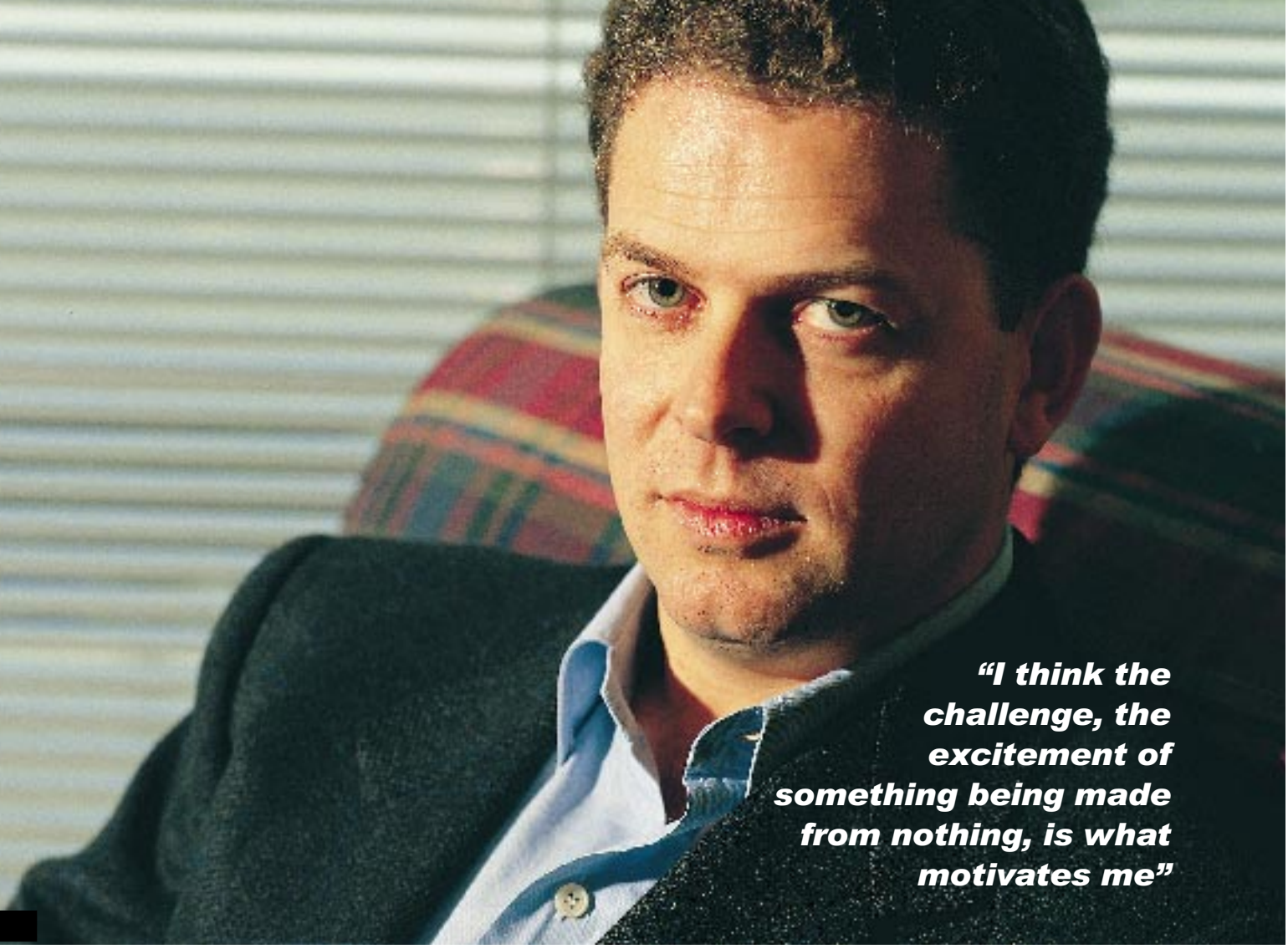
"Bill Gates' vision — and I found myself in full agreement with it — is exceptional... There's one key vision I have for the future... It was a tough market, but my vision was to see it work at a global level... Our vision is of a world where we can deliver scalable components on any platform."

Michael Skok is the quintessential thirtysomething British entrepreneur. I'd read somewhere that he was a millionaire by the time he was 24. He disagreed: "Earlier than that, I hate to say. But the interesting thing is, I never realised it." He started out as a stereotypical computer whizkid. Now he looks like a stereotypical City businessman. En route from tee-shirt to Crombie he's built up a number of companies, including Skok Systems, ESP, Symantec, and the new one, AlphaBlox. Basically, he starts out with the vision, invests years and capital into a project, decides enough is enough, gets some more vision, and then moves on to another. So how did it all start?

"Through the fairly usual channels of prep-school, public school and university, where I studied management science and engineering. But already, by the time I got to university, I realised that the engineering part of the degree really wasn't for me." His Road to Damascus experience actually occurred a couple of years before, aged 16, when he first encountered a Hewlett-Packard programmable calculator. "The fascination never stopped from that point on. The excitement of being able to solve a problem — automatically get a result — was just incredible."

Back then, programmable calculators and other such pieces of primitive computer hardware were somewhat akin to cars without a steering wheel or gear-box. The concept was fine, it was just that no-one produced much off-the-shelf software for the things. You had to do it yourself. Most people couldn't, or wouldn't. Skok soon discovered a lucrative niche market writing applications for them: arbitrage systems, inventory control software, shipping routing systems and so on.

"I did a number of consulting assignments for organisations such as Rank Xerox stores, and other people who were beginning to sell what were then the early PCs. I suddenly discovered that I could make money. But I just loved the work and found that it was incredibly




rewarding. So by the time I left university, I'd already found my career and was enjoying it."

Upon graduation, Skok went to South Africa to join his father and brother, arriving just in time for the start of international sanctions. There, amid what he describes as "truly horrendous market conditions", he founded Skok Systems, which produced some of the world's first networked desktop CAD/CAM packages. The country's economic climate didn't turn out to be a problem.

"We quickly focused our business on the products in the marketplace and not the country itself. I spent the bulk of my job running international offshoots of Skok Systems, including branches in Australia, Singapore and Europe. I did some important OEM deals with people like Hewlett-Packard, which turned out to be some of our biggest business. So although it was a tough domestic market, we made our business work at a global level." Skok was soon raking it in to the tune of $16 million worldwide. Not that the money went to his head.

"It may sound a bit odd, but my brother and I didn't regard the amount we had in the bank merely as being a measure of how well we were doing. At that age, you don't have a lot of outgoings or dependencies like families, so you don't really think about it. What you do think is: are we succeeding? Are we managing to compete?

"One of the things I think was important was that we never assumed that the next risk wasn't going to require every bit of capital we had. So it might have seemed like we had a lot of money, but our assumption was that, at any point in time, no matter how much was in the bank, we might need that money the next day to develop a new product or open up a new market."

Having achieved initial success in 1988, Skok moved back to the UK and founded his second company, ESP (European Software Publishing) Systems, intended to research business needs, source the best products, and provide businesses with the necessary investment in management, marketing and support. In the same year, he founded the software company Symantec, probably best known for its database-cum-word processor, Q&A. It was a rather good, albeit no frills package, which has now been unceremoniously dropped. Ben Tisdall asked me to ask why.

"Good question, Ben," he said, misty-eyed for a moment. "What happened to Q&A is rather classic and symptomatic of the industry. It literally fell by the wayside as Symantec got caught in the move to Windows. Sadly, they hadn't been early enough to market with a Windows version of Q&A and along the way competitors eventually displaced them.

"That's the unfortunate thing about Windows — the juggernaut of the industry — in that it sometimes leaves its users' needs behind. What users really need aren't massive, integrated suite-style applications, but simple, individual component pieces of software, each of which does a specific task. Which is where our OfficeBlox products come in."

OfficeBlox is the MFI/G-Plan approach to software. Basically, all the really essential applications are split into their component parts. Running under Windows 95, each element performs one specific function. CalcBlox, for example, is a calculator. NoteBlox allows users to take notes. ListBlox allows you to make lists. You can use them individually, or thanks to the underlying OLE technology you can join them together in whatever way you like to build up your own office software suites. Alternatively, they can be launched from within other Win95 applications. Each OfficeBlox program is only about five

percent of the size of traditional applications and so loads, and works, a lot faster. Where did the idea come from?

"From listening exactly to our customers' views. They said there had to be a better way of solving business problems than putting the whole bloody lot into a big box and saying: it's in there somewhere — you figure it out. What we've found is that if you analyse what people do with different software packages and systems, they need very specific things to do very specific tasks. They don't want to be distracted by add-ons. The OfficeBlox approach — componentising exactly what people need — is my vision of the future of the software business."

AlphaBlox and its products were kicked into life back in August of last year, before Windows 95 was even launched. Wasn't this a big risk?

"We were staking an awful lot," he agreed. "But what we didn't want to do was offer a product that was hampered by being on old technology. We believed first of all that Win95 as an operating platform provided so many clear benefits to users that, at some point, it would begin to take hold. Besides, I've always taken a long term view of business. I have a view that no business is going to get anywhere within less than three to five years."

Possibly. But, ultimately, are the smaller software houses, such as his own, going anywhere? Many people reckon that, in the face of the joint efforts of Microsoft and IBM to rule the world, the lesser players could be forced out of existence. Might AlphaBlox be one of the many casualties?

"There's no question that size plays a competitive advantage here, in everything from buying media space to your ability to get shelf-space. However, the industry has changed. There are now many ways in which smaller companies can address those challenges, either in a guerrilla-like fashion or an intelligent fashion, such as forming strategic alliances. Another way — our way — is by riding a wave others are building for us. Windows 95 is just such a wave. One of the exciting things about our technology is that it not only does something valuable in its own right, but it adds that functionality to other Win95 programs, too. In this way, we're effectively playing alongside the big boys, rather than going against them in full frontal competition."

Very well. So modular, object-orientated packages are the future of software. What of other future trends? The world, obviously, is going to become increasingly more "wired", thanks to the Internet and other advances. Skok cited instances where the underlying communications infrastructure has already started to transform our lives.

"Yesterday, we had a video conference — a face-to-face interactive meeting — with a major company in Germany. It required a combination of video conferencing, ISDN communication and the ability to send and transmit software across the World Wide Web in a very short time. I wouldn't have even considered

doing that using the technology that was available just 18 months ago. Since then we've come on in leaps and bounds."

Skok has also wired up his own home using the same technology. "I've had ISDN in my business and in my home for quite some time. It enables me to 'virtually' work wherever I need to, regardless of location. Some days, you'll find me getting home as early as I can to take advantage of the time zone differences. On other occasions I'll work very late into the night to catch, say, Australia or take advantage of the US day. The only difficulty with work in today's world, or for us as a global corporation, is that the time zone difference means that there's potentially a 24-hour working day. Not that I'd advocate it for anyone. No-one's capable of going without sleep."

Nevertheless, he has a vision of the wired world breaking down the barriers between different industries and, in time, giving rise to the next key trend: all homes and offices will be equipped with a multi-purpose device which will be used either as a TV, a computer, a fax machine or a video conferencing device.

"I call this the 'digi-centre'. I might trademark the word one day. What that device will look like depends on the type of customer being targeted. But the digi-centre is bound to have PC-like functionality built in. I'd like to see it modular. So you, the user, will decide whether or not you want to plug in a 1086 processor to do your own word processing, accounts, or whatever, at home. Or couch-potatoes will simply be able to use it as a big television set."

He believes there's every likelihood that data storage will no longer be local. Instead, you'll pay the network provider a monthly sum and they'll store all your word processed files, digital images, and telephone conversations somewhere off-site, to be called up over the line as and when required. But isn't this going to require a massive overhaul of the underlying telecommunications infrastructure?

"Yes and no. There are various ways to tackle this bandwidth problem — fibre optic, satellite. The important thing is, there isn't just one industry that's going to dominate here. I think there's an incredible opportunities for changes in hardware and software."

And, presumably, Michael Skok, as head of whatever company's he's running by then, will be up there, taking advantage of them? Or could there come a time, possibly in the very near future, when he'll feel content to drop everything and just sit back and reap the rewards of all those years of hard work? Apparently not.

"If money were ever the driving force, I'd stop today. It's not. I think the challenge, the interest of building things, and the excitement of something being made from nothing, is what motivates me. It's exciting, but it can also be unbelievably hard work. You've got to be persistent, diligent and disciplined about going after your vision. My key belief is that you have to do what you enjoy. And if you do what you enjoy, you tend to do it well. If you do it well, you're successful at it." ■

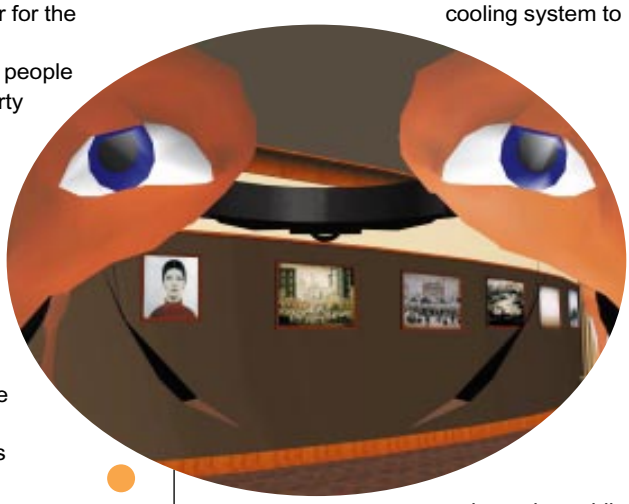
# Four wheels on my trolley

**A high level of virtual reality technology has enabled Sainsbury's to recreate its Salford store, inside and out. Its researchers can now "walk" around the store, adapting, improving and increasing profitability. Simon Rockman pushes his trolley to this deli counter of development techniques.**

When Mike Matthews wrote his initial memo, concerning a virtual reality (VR) project, to his bosses at Sainsbury's he stated that it would not be possible to recreate a whole store. But now, just over four years later, Matthews talks not only about how accurate is the model of the Salford store, but discusses options for improving and adapting it.

Mike is CAD manager for the development division of Sainsbury's. He tells the people who look after the property what can and cannot be built. He waxes lyrical about the new design of air curtain which allows the doors of the shops to remain open while retaining the level of air conditioning inside.

The Salford store, with 27 checkouts, is one of Sainsbury's largest. A regular customer there is Andrew Connell, the lead researcher into VR solutions at Intelligent Systems Solutions (Insys), a company spun off the Advanced Robotics Research centre at the University of Salford.



*The technology has uses far beyond supermarkets*

It is Insys which has produced the virtual reality supermarket for Sainsbury's and has produced a number of similar projects for various companies including GEC, ICI, British Nuclear Fuels, Vickers Shipbuilding and Northern Telecom (Nortel). These companies are part of a consortium which has funded Insys to carry out leading edge research into virtual reality. Although they all want different things, their requirements are the same in many ways.

Vickers Shipbuilding wants a computer model of a submarine to see whether an engineer could reach around parts of a cooling system to reach a valve, while Sainsbury's wants to see if a butcher can reach around a cash register to the front of the meat counter. In the past, Vickers would have built a model — the American military builds full-size wooden models of submarines, while the British tend to use scale models, with scale model people. Sainsbury's would just build the actual set-up to see if it worked.

*There is a tremendous amount of detail on the model. This view looks very convincing through a headset*

The benefits of VR suit all those companies dealing with Insys so well that they have formed a club, the VRS (Virtual Reality & Simulations club) to fund and share Insys research. This has replaced the government funding which was originally supplied to the National Advanced Robotics Centre. There are 12 members of the club, each paying £25,000 per year. This high level of funding is necessary because the research unit needs the most powerful systems available.

### High-speed hardware

The machines Insys uses are Silicon Graphics Onyx machines. They have two: each with dual MIPS4400 processors and 96Mb RAM. The high-throughput design makes them suitable for the graphics-intensive use to which Insys puts their machines. They are fitted with Reality Engine II graphics cards and are capable of very high speed rendering.

The hardware looks after a lot of the functions which would normally be handled in software — texture mapping

Glass can be simulated

and z-buffering included. Turning off texture mapping on a PC multiplies the frame-rate: on the Onyx it's only an eight percent performance penalty. This big machine cost a quarter of a million pounds three years ago — its replacement is on order.

Insys uses smaller computers as well: Pentium and 486-based units running Superscape, the 3D program which grew out of a home games system.

The Pentium systems allow Sainsbury's and other members of the club to test out store designs without having to use the powerful computers at Insys, but the results are less convincing. There is no texture mapping and the resolution is not as good, but this smaller system becomes an excellent communications tool: other people can be shown a representation of how a new store layout would look.

## The walls come tumbling down

Part of the original research specification was for an "instant change" option. This allowed Mike Matthews to see what the Salford store would look like if the back wall were to be changed to resemble that of another store. But the speed at which the resulting alterations were presented for viewing was just too fast and thus a slow change option was added: now, the original wall of a particular store (with all its shelves and counters) slides down and the new wall slides in from above.

The viewer has full control over the characteristics of the world the supermarket inhabits

The back wall of a supermarket is particularly important. Stores are laid out with all the basics like milk, meat and bread at the back of the shop so you have to walk past shelves of other items you didn't think you wanted when you first entered. The back wall is one of the many changes which can be easily made using this type of system and that is the major attraction for Sainsbury's.

By far the simplest method of solving in-store problems would be to walk around the actual store, but travelling to various sites from head office is time consuming. Added to this is the difficulty of achieving the direct comparisons possible by using a computer model; to slide out a back wall, for instance.

## Café society

The company found that a café in one of its stores wasn't doing as well as expected. By "walking" around the computer model they found that there were certain angles from which the sign was obscured. The sign was duly moved and trade picked up.

Stores are designed using CAD (computer aided design) and the data entry for these systems is helped by the universal use of the DXF file format. Yet the Salford store was built from architectural plans, dimensions and photographs. Normally, only the inside of a store is designed. The Salford design is unusual in that it incorporates the outside of the store as well, with the car park and signage. This resulted in a sign having to be moved because, from a car travelling at a reasonable speed, you couldn't see the entrance soon enough to turn into it.

But practical experience is still necessary: Insys' Andrew Connell bemoans the introduction of the no-entry sign which makes his journey home just that bit longer.

Driving around the empty virtual car park feels a bit strange. It's quite realistic, though; a feeling helped by the algorithm having inertia and collision detection. If you drive over the flower beds, the view tilts accordingly. You can only get up steep slopes if you are going sufficiently fast, but with enough of a


The interior view mixes bitmaps with vector images

## Computer data checkout

Computers are good at extracting money from customers and supermarkets have relied on systems for stock control and management functions for decades. The LEO (Lyons Electronic Office) was the first computer to be used in commercial applications, way back at the dawn of computing, but now computers are being used to make the most of the information that's available within every supermarket.

### Do-It-YourSelf-scan

Safeway is experimenting with a system called Self-scan. Customers who have a store card can carry their own bar-code scanner around the shop. As they take items off the shelf they scan the bar code and put the product in the trolley. Fresh produce is weighed in the bag and the scales produce an individual bar code. Goods can be put back by deleting them from the scanner's memory. When the customer arrives at the checkout, the scanner is handed in and the bill produced.

The system is open to abuse. Although Safeway can identify all its customers who are using scanners, it would nevertheless be possible for these customers to put goods into their trolleys without scanning them, or to add a couple of carrots to a bag after it had been weighed. But Safeway believes the system holds advantages in the speed at which customers can be processed and believes in showing trust (there are plenty of other ways in which a shop can be defrauded). Nevertheless, facilities do exist for checking-up at the checkout point — just to make sure.

### Trolley traffic

Database management is another useful application. Stores keep a close eye on what is sold and when. With the advent of store cards — Tesco is a leader in the field — the shop can also tell who is buying what. If the shop knows that Tuesday evenings are the time when their customers are more likely to be single males, they may use the public address system to announce bargains on TV dinners and lager. At a time when mothers are more likely to be in the store, baby food and nappies can be promoted.

Beyond this, there is scope for attempting to reduce in-store traffic at busy times and increase it during quieter periods. This could be achieved by making it cheaper to shop at certain times.

By using LCD price tags on the shelf, the store could automatically adjust its prices so the best possible price would be available to the shopper at certain times — a system with which the store's own buyers are familiar when purchasing fresh produce at the market.

*The Salford store is unusual in having an exterior view*

run-up you can get onto the roof of the shop!

Even though it is quite like a computer game, it needs to be modelled on real life and this has a significant effect on performance. The Silicon Graphics machine may cost a thousand times more than a Sony Playstation but the results are comparable only in terms of frames per second (fps): the system runs at about 12fps with a 640 x 480 display but looks good thanks to the resolution and colour depth. The speed is around 300,000 polygons per second with realtime anti-aliasing and blended pixels. This means zooming in on a bitmap doesn't go blocky the way it does in a game such as Doom. The software averages the colour between pixels.

### Names in lights

Future improvements will see Insys using radiosity rather than ray tracing to cater for the lighting in a virtual reality store. Although this may mean that the results are technically less accurate, they will nevertheless look better, particularly with lighting effects such as neon. It is in an area like this, where the gap between commercialism and research is bridged, that Insys comes into its own.

### Immersive VR

For calculating how well a new design will work, it is best to use immersive VR. Insys has worked with a number of headset designs and views rapid development in this area as being the tool which will help its particular type of research gain more mass-market appeal.

Although the human eye is far more critical of detail when looking straight ahead, it has a very wide field of vision. Anyone walking into an optician with vision that was only as good as the average VR headset, would be registered blind and qualify for state aid.

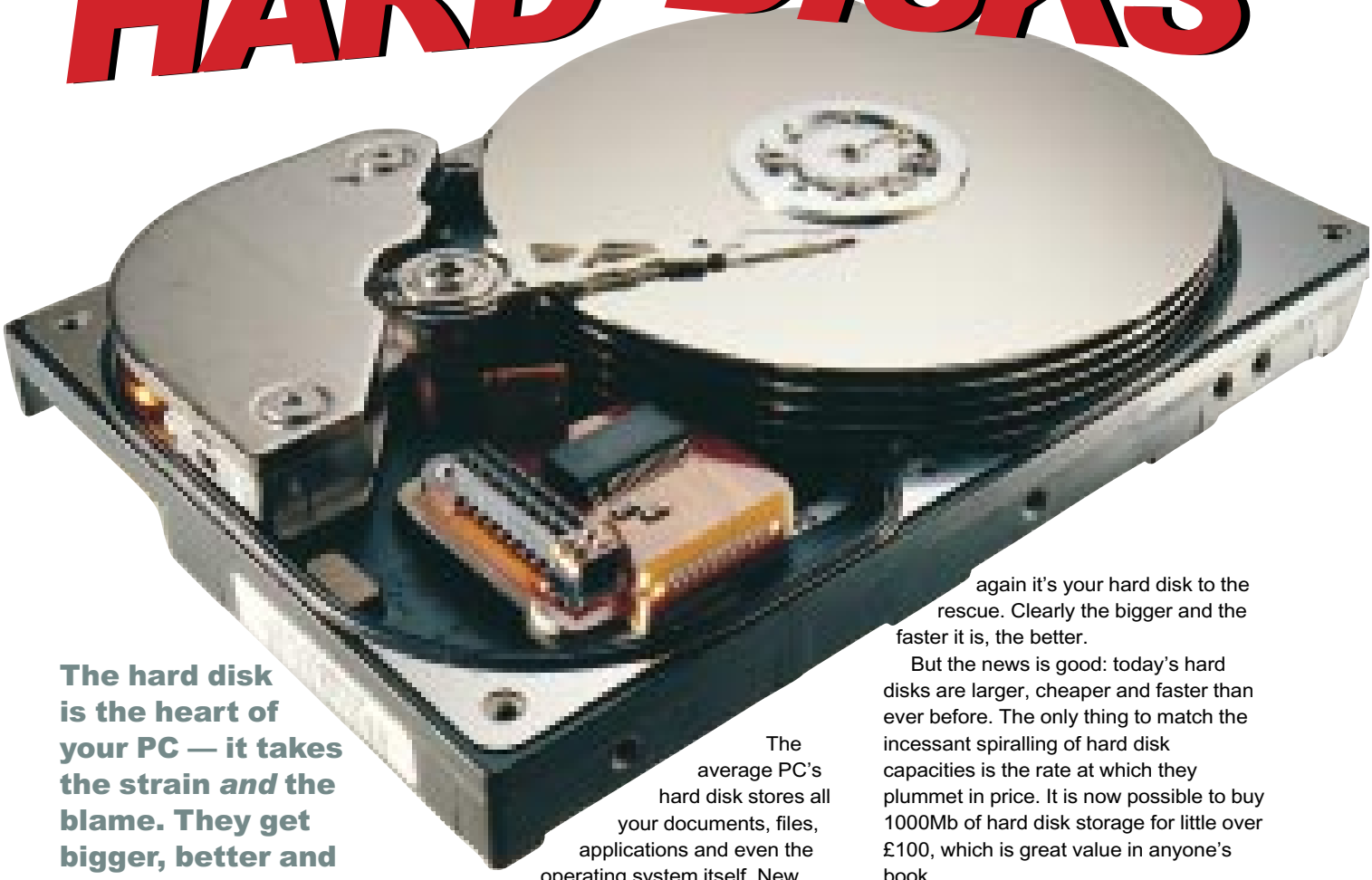
New headsets with better resolutions and wider fields of view are appearing, but they are expensive: a headset with 1024 x 768 resolution still costs more than £120,000. A more moderately-priced headset, with 640 x 480 resolution and 75° field of view still costs £20,000. Insys likes the lightweight Virtual IO headsets which only cost hundreds of pounds.

Lighting and VR will help the virtual Sainsbury's look more realistic but they won't *feel* more realistic until they are "populated": this will probably take the form of trolleys propelling themselves around the shop. More difficult will be the addition of shadows.

### The good old days

But even these additions are a far cry from the possibilities that Sainsbury's Mike Matthews envisages. Today it's possible to walk around a virtual supermarket, take things off the shelf and examine them, put them back, or add them to a list of items you want to buy. Sainsbury's uses this for store design but in the future it might be possible to walk around the store from your own home. Technology like 40Mbits/sec cable modems make silicon shopping a real possibility. You could "walk" around a shop from the comfort of home and the shopkeeper would deliver the goods to you. It's not so very different from the way shopping was done fifty years ago.

# HARD DISKS



**The hard disk is the heart of your PC — it takes the strain *and* the blame. They get bigger, better and cheaper all the time, as Eleanor Turton-Hill and Gordon Laing explain.**

It's the hardest working part of your PC, the component that continually hammers away to keep your machine afloat. Which elements of your system are you least happy with? If you answer speed and storage capacity, then your hard disk is probably most to blame.

The average PC's hard disk stores all your documents, files, applications and even the operating system itself. New versions of software may offer greater facilities, but inevitably demand more space. Typical documents these days are not just limited to plain text; they may consist of storage-hungry sound and video clips. It's no wonder that yesterday's hard disks just cannot cope with the strain.

Remember that before your fast processor can get down to work, the information must be accessed from your hard disk. If RAM is short and virtual memory facilities are called upon, once again it's your hard disk to the rescue. Clearly the bigger and the faster it is, the better.

But the news is good: today's hard disks are larger, cheaper and faster than ever before. The only thing to match the incessant spiralling of hard disk capacities is the rate at which they plummet in price. It is now possible to buy 1000Mb of hard disk storage for little over £100, which is great value in anyone's book.

Over the following pages we're looking at two very different ends of the hard disk market. At one end, representing value and the upgrade market, are IDE drives around 1Gb in capacity and costing around £150. At the other, representing high performance and specialist work, are SCSI drives, 2Gb in capacity, and costing around £550.

Along with detailed tests, results and conclusions, we've also got features on the IDE and SCSI interfaces, and the way a hard disk actually works.

## How they work

The hard disk inside your PC is made of aluminium alloy covered with a magnetic coating. This disk itself is a rigid plate, hence the term "hard", and is completely sealed inside the case. They also spin very fast and have high recording densities, which means they must be kept free from dust and any other kind of environmental contamination.

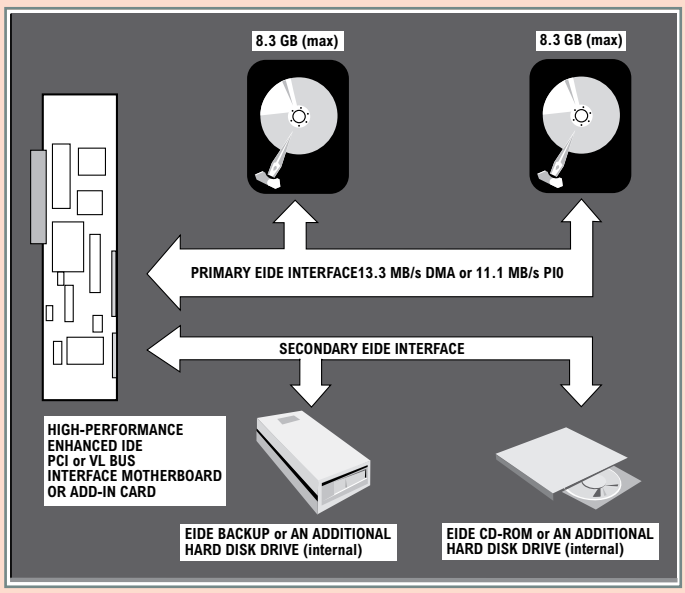
Data is recorded onto the magnetic surface of the hard disk in exactly the same way as it is on floppies or digital tapes. Essentially, the surface is treated as an array of dot positions, each of which can be identified and set to a binary "1" or "0". The position of each array element is not identifiable in an "absolute" sense, and so a scheme of guidance marks helps the recorder find positions on the disk. The need for these guidance markings explains why disks have to be formatted before they can be used.

When it comes to accessing data already stored, the disk spins round very fast so that any part of its circumference can be identified quickly. Hard disks typically spin about 5,400rpm or 1/90 second per rotation. High-performance drives today spin at 7,200rpm and the best are able to sustain around 7Mb/s.

# EIDE (Enhanced Integrated Drive Electronics)

It's well known that the internal parts of the average home PC do not (alas) fit together like the bricks in a Lego set. But as the personal computer market matures, universal standards are slowly making an impact on the design and compatibility of PC hardware. The process is slow, and as with many other consumer products, standardisation is a difficult and messy process.

One of the earliest and most significant standards introduced into PC hardware was IDE (Integrated Drive Electronics), a standard which controls the flow of data between the processor and the hard disk. The IDE concept was initially proposed by Western Digital and Compaq in 1986 to overcome the performance limitations of earlier subsystem standards like ST506 and ESDI. The term IDE itself is not an actual hardware standard, but the proposals which were put forward were incorporated into an industry-agreed interface specification known as ATA (AT Attachment). ATA defines a command and register set for the interface, creating a universal standard for communication between the drive unit and the PC.



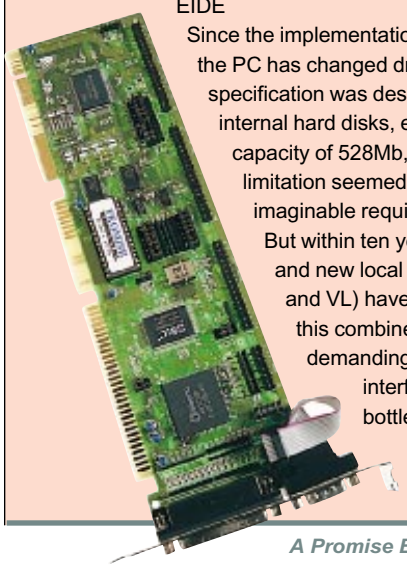

One of the major innovations introduced by IDE was the integration of the disk controller functions onto the disk drive itself. The separation of the controller logic from the interface made it possible for drive manufacturers to enhance the performance of their drives independently — there were no performance-boosting features incorporated into the ATA interface itself.

The mass acceptance of the IDE standard hinged on its ability to serve the needs of the market in terms of two important criteria: cost and compatibility. Over the years, these two factors have been more significant to mainstream PC users than high performance and as a result IDE rapidly became established as a mass market standard.

## EIDE

Since the implementation of the ATA standard, the PC has changed dramatically. The IDE specification was designed to support two internal hard disks, each with a maximum capacity of 528Mb, and in 1986 this upper limitation seemed to be beyond all imaginable requirements for PC users. But within ten years, faster processors and new local bus technology (PCI and VL) have been introduced, and this combined with increasingly demanding software made the IDE interface into a performance bottleneck.

In 1993 Western Digital brought EIDE (Enhanced IDE) onto the market. EIDE is a standard designed to overcome the constraints of ATA while at the same time maintaining backward compatibility. EIDE supports up to four internal devices including CD-ROMs and tape drives — a great improvement on IDE, which was designed exclusively for the connection of hard disks. EIDE also allows for disk drives with a maximum capacity of 8.4Gb and data transfer rates up to 13.3Mb/sec.



*A Promise EIDE interface card*

## EIDE in detail

The four possible devices on an EIDE system are handled by two channels. Each channel supports two devices in a master/slave configuration. The primary port is generally connected to a local bus (PCI or VL), and this is set to the same address and IRQ setting as it was on the standard IDE system. This ensures backward compatibility with IDE systems and prevents conflicts which could otherwise crop up with your operating system, or other software which communicates with an IDE device. The old IDE system must be set up to cope with the enhancements in EIDE (higher performance and increased hard disk capacity) and this is enabled by additional software.

The ability to support non-disk peripherals such as CD-ROM drives and tape drives was made possible by the ATAPI (AT Attachment Packet Interface) specification, defined by Western Digital. ATA is the protocol used to transfer data and status and control information between a PC and a hard drive. ATAPI is an extension of the ATA protocol defined to bring a single command set and single register set to CD-ROMs, and it can also support other devices, such as tape. ATAPI contains several commands which are specific to CD-ROM devices, including the Read CD command group as well as a CD speed-select command.

## PIO modes

The most significant benefit of EIDE is its massively improved data throughput, compared to the original ATA standard. Fast data transfer is made possible by the higher bandwidths available on VESA and PCI local bus architectures. On a standard ISA bus host transfer rates are limited to 2-3Mb/sec, whereas new transfer modes permit rates ranging from 10-20Mb/sec — speeds comparable to those achieved using Fast SCSI-2.

This fast data transfer operates using new definitions for Programmed Input/Output (PIO) — a standard method for transferring data between the drive and the PC. Definitions already exist for transferring data using Direct Memory Access (DMA), but these require substantial changes in the BIOS and in external device drivers.

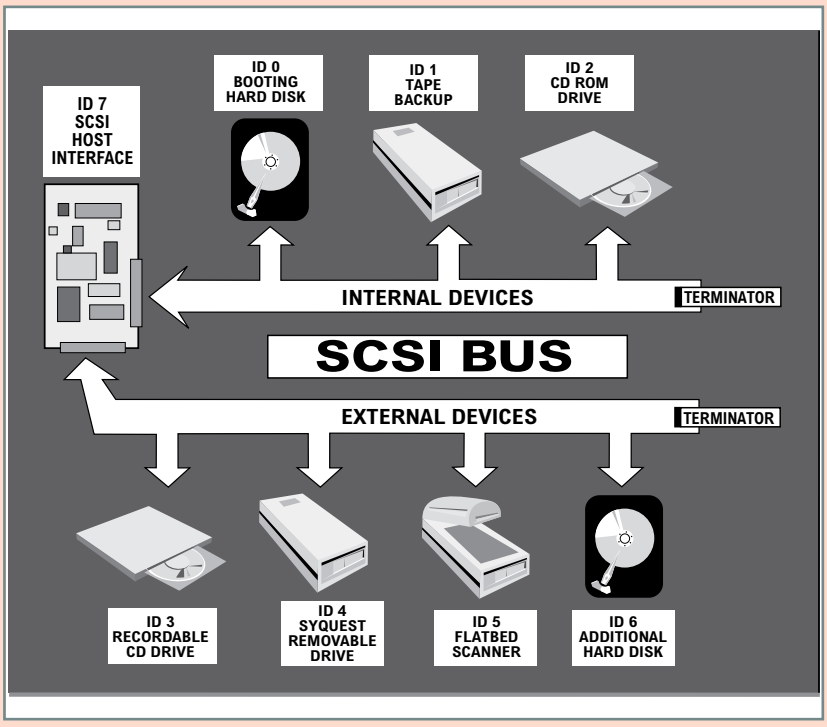
Enhanced IDE in its most common form currently defines PIO mode 3, which allows data transfer rates up to a maximum of 11.1Mb/sec. PIO mode 4 is now appearing on the market and allows an even higher data transfer rate of 16.6 Mb/sec.

**Eleanor Turton-Hill**

# SCSI (Small Computer Systems Interface)

The Small Computer Systems Interface, known as SCSI (pronounced scuzzy), was developed in the early eighties. SCSI, like IDE, is a bus which controls the flow of data (I/O) between the computer's processor and its peripherals, the most common peripheral being the hard drive.

SCSI peripherals are connected in a chain to a SCSI host adaptor which controls the system. Each device on the chain, including the host, must be identified by a unique ID number. One SCSI device must not use the same ID number as another, but they may be numbered non-sequentially.




Vanilla SCSI supports up to eight devices, using ID numbers of 0 to 7. The controlling host adaptor traditionally occupies ID 7 and boots (starts up) the operating system from the device with the lowest ID number. Most SCSI systems set the boot hard drive at ID 0, leaving IDs 1 to 6 free for other non-booting devices. When a SCSI system starts up, all the devices on the bus are listed along with their ID number.

Most SCSI host adaptors feature external and internal connectors, with the option for the chain to extend in either or both directions. Both ends of the chain, whether at the host or a device, must be electrically "terminated" with resistors to prevent signal reflections and guarentee data integrity over long cable lengths. Termination comes in several varieties, from physical jumpers or plugs to software configurations.

SCSI peripherals include hard drives, CD-ROM drives, scanners, CD recorders, tape drives, rewritable optical or removable drives. The ability to connect up to seven of these, internally, externally or both, offers far greater flexibility than Enhanced IDE's limit of four internal devices.

## SCSI evolution

The bandwidth of a system is the maximum amount of information that may be sustained on the bus and therefore has a significant effect on potential performance. The original 1986 SCSI-1 standard used asynchronous transfer, where the host and device, blind to the other's maximum potential, slowly exchanged 8 bits at a time, offering a bandwidth of up to 3Mb/s.

With synchronous transfer, the host and device together determine the highest rate of transfer they can sustain and stick to it. SCSI-2 featured synchronous transfer, raising the bandwidth to 5Mb/s. A later extension known as Fast SCSI-2 used synchronous transfer at twice the speed, boasting a maximum rate of 10Mb/s. The Fast SCSI-2 standard, completed in 1994, is currently the most common SCSI variety.

Wide SCSI runs at the same clock speed as standard, *narrow* 8 bit SCSI but uses a 16-bit data bus, again doubling the bandwidth. A Fast Wide SCSI-2 bus may sustain 20Mb/s. Wide SCSI adaptors may support up to 16 devices on a single chain, with IDs 0 to 15.

The latest incarnation, UltraSCSI, doubles the speed of Fast SCSI-2 again, offering synchronous rates of 20Mb/s. Wide UltraSCSI uses the same clock speed as UltraSCSI, but using a 16-bit data bus doubles the bandwith again to 40Mb/s. The first UltraSCSI host adaptors from Adaptec and BusLogic arrived in late 1995, with the first UltraSCSI hard drives emerging in the new year. All major hard drive manufacturers have announced support for this new standard.

SCSI is entirely backward compatible, with ancient SCSI-1 devices operating on brand new UltraSCSI host adaptors. In order to exploit the potential of faster, more recent SCSI devices, you will of course need a matching host adaptor. Similarly, the fastest host won't speed up an old, slow SCSI device.

## Bus issues

Remember that the bandwidth of a SCSI system limits the *combined simultaneous* transfers from all the devices on the SCSI chain. The ISA bus bandwidth of 5Mb/s is clearly not suited to anything greater than a SCSI-2 host with a single hard drive. Much better are SCSI host adaptors designed for use in local bus systems, particularly PCI which can support a bandwidth of 133Mb/s.

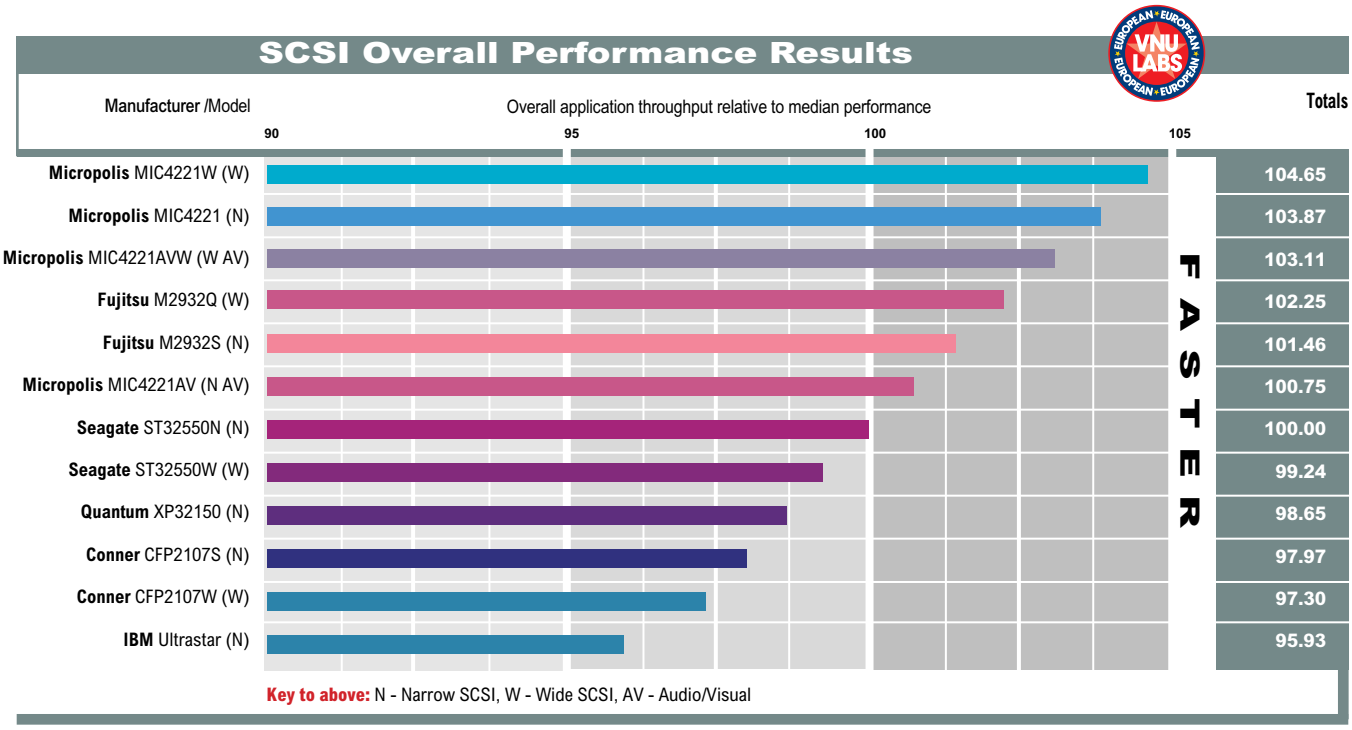
However, the Wide UltraSCSI bandwidth of 40Mb/s does not herald the arrival of single hard drives delivering 40Mb/s. Indeed, even at today's fastest spindle speeds of 7,200rpm, a single hard drive may sustain 8Mb/s, at best. But put four of them on the same SCSI chain, all requesting top burst transfer rates, and you'll need Wide Ultra to avoid saturation of the bus.

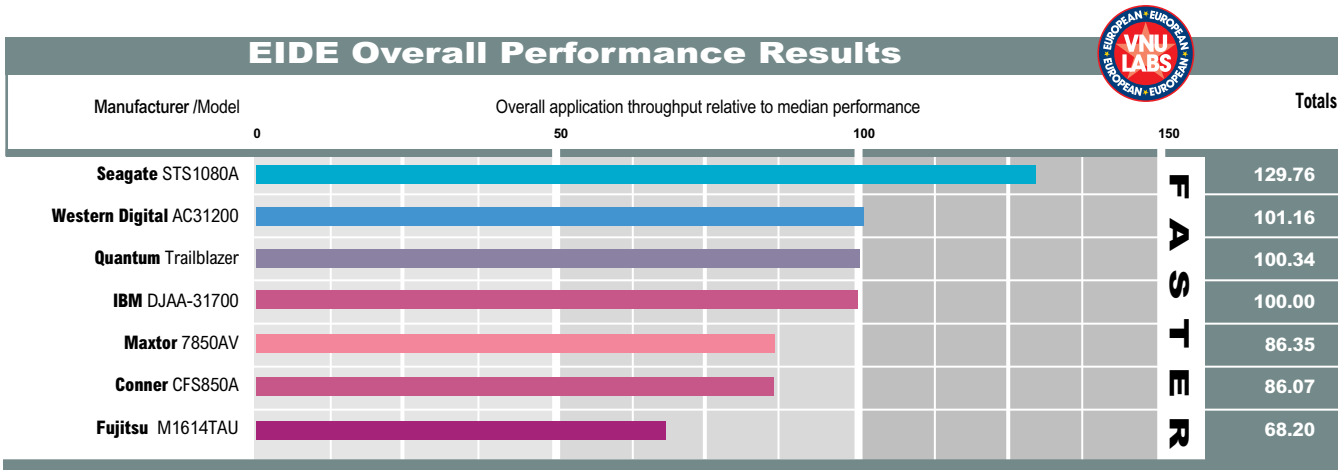
## The future of SCSI

Plug and play bounds ever-forward with the recent introduction of SCAM, SCSI Configured AutoMagically. This horrendous acronym refers to the ability of a SCAM-equipped host adaptor, such as Adaptec's latest PCI 2940 Ultra Wide, to automatically set the IDs of SCAM-compliant SCSI devices, thereby avoiding any conflicts.

The proposed SCSI-3 standard consists of several levels, including normal and wide UltraSCSI, which could be the final flavour of parallel SCSI. The future of SCSI-3 and indeed most high-performance I/O lies with serial solutions including SSA (Serial Storage Architecture) and Fibre Channel.

**Gordon Laing**




# How we did the tests

The major obstacle in providing meaningful benchmark results is that performance tests tend to measure just one attribute of a given component. To give a more accurate view of performance we've used three different tests, each one measuring a different aspect of performance. Our conclusions are based on the combined results of these benchmarks, which operate using a combination of real-world and simulated workloads.

For each test, the hard disk is attached to the test machine as an empty D: drive. This prevents collisions, fragmentation and other aspects of the operating system from influencing the results. The test machine was a PCI Pentium 90, with test IDE drives connected to the second channel of the on-board PCI EIDE controller and test SCSI drives connected to an Adaptec PCI Ultra SCSI host controller.

To get a measurement of raw data throughput, the first test uses a series of "empty" files (containing only space characters) to provide a load. This test is run using the HPFS (OS/2) file system which itself resists fragmentation. The HPFS test stresses disk performance in a non-DOS/Windows environment, and for this reason it's given a low weighting in the overall score.

The second benchmark uses the Euromark component-level test and measures the performance of the test disk against a "control" score, working at the OS level. It comprises a selection of file-level and BIOS-level random and sequential reads and writes of differing block sizes. In order to create repeatable test results and to actually pressurise the disk rather than the whole system, this test bypasses SmartDrive and other disk caches.

The third test is an application-level test which measures the real world benefits of a particular hard disk. The test runs with typical (default) disk cacheing options in operation and relies on FoxPro, a disk intensive database application (FoxPro ran under DOS for the IDE drives, and for Windows, running under Windows 95 for the SCSI drives). The actual operations include a mix of file-level sequential and random reads and writes using the default block size determined by the OS.

# Conclusion

## EIDE

All the EIDE hard disks included here support EIDE mode 3, which is now the standard for mass produced hard drives. Despite the universal adoption of EIDE, our performance results show a clear difference between each of the drives in this round-up. So what is it that makes one hard disk faster than another?

To fully exploit the high-speed electronics in a hard drive, the mechanical elements must be designed for optimum performance. So, although a disk may have the electronic capability of EIDE mode 3, it will not achieve high transfer rates unless the internal mechanics of the drive have been appropriately optimised.

The seek time, for example, is an important factor. This is a measure of how fast the hard drive can move its read/write head to the desired location. Rotational latency is important too: this is the average time which the read/write heads must wait for the target sector on the disk to pass under them. The reduction of seek time and rotational latency (measured in milliseconds) is fundamental when it comes to optimising hard disk drive performance, and in our EIDE tests the Seagate ST51080A was undoubtedly the best performer.

## SCSI

Many of SCSI's high-performance features are only relevant in multi-tasking environments and/or those with several devices on the SCSI chain. It is still therefore ideal for servers, but with the advent of Windows 95 its benefits are becoming much more apparent on high-performance desktops. These of course include those running OS/2 and Windows NT.

SCSI is almost exclusively found on systems designed for AV work: its high-performance capabilities are ideal in situations where huge quantities of data must be transferred at high speed. Micropolis is one manufacturer that offers dedicated AV hard drives, which eliminate possible recording and playback glitches by not pausing to thermally recalibrate the unit.

Dedicated AV drives are optimised for this work, and while high performing all-round they are best left for AV storage. An ideal AV environment would feature two SCSI drives: a standard drive to store the operating system and applications, leaving an AV drive dedicated entirely to sound and video files.

However, SCSI isn't just about high-end. There's also the undeniable connectivity advantage of up to seven or fifteen devices per host adaptor, which may include external peripherals, and some which are first, or even exclusively available, for SCSI; today's largest single hard drives measure 9Gb and are currently SCSI only.

When choosing a SCSI system, decide what data bandwidth your applications require. Most users will be satisfied with 10Mb/s Fast SCSI-2, where peripherals and hosts are available fairly cheaply. Users with several drives, requiring a high bandwidth to avoid bus saturation, should opt for Wide or UltraWide SCSI solutions. The SCSI host we recommend is Adaptec's PCI UltraWide SCSI master, costing £275, although any card from Adaptec is unlikely to disappoint. Cheaper ISA cards are available but make sure the one you choose is capable of booting a hard drive, if this is what you want to do.

The results clearly show very little difference between the drives tested, indicating that one 2Gb SCSI drive performs very much like another when operating without other bus traffic, and within the bus limitations. At the top of the results, sustained data transfers were measured at just over 7Mb/s. A Fast SCSI-2 host could support this and, say, a fast CD-ROM drive without saturation. Heavy use of several drives simultaneously would warrant the larger bandwidth of Wide or Ultra peripherals and hosts.

The hard disk is often the slowest element of a local bus system, making even tiny performance differences worth noting. In this case, Micropolis, with the top three results, is the winning SCSI manufacturer, but the others are extremely close behind.

## Overall

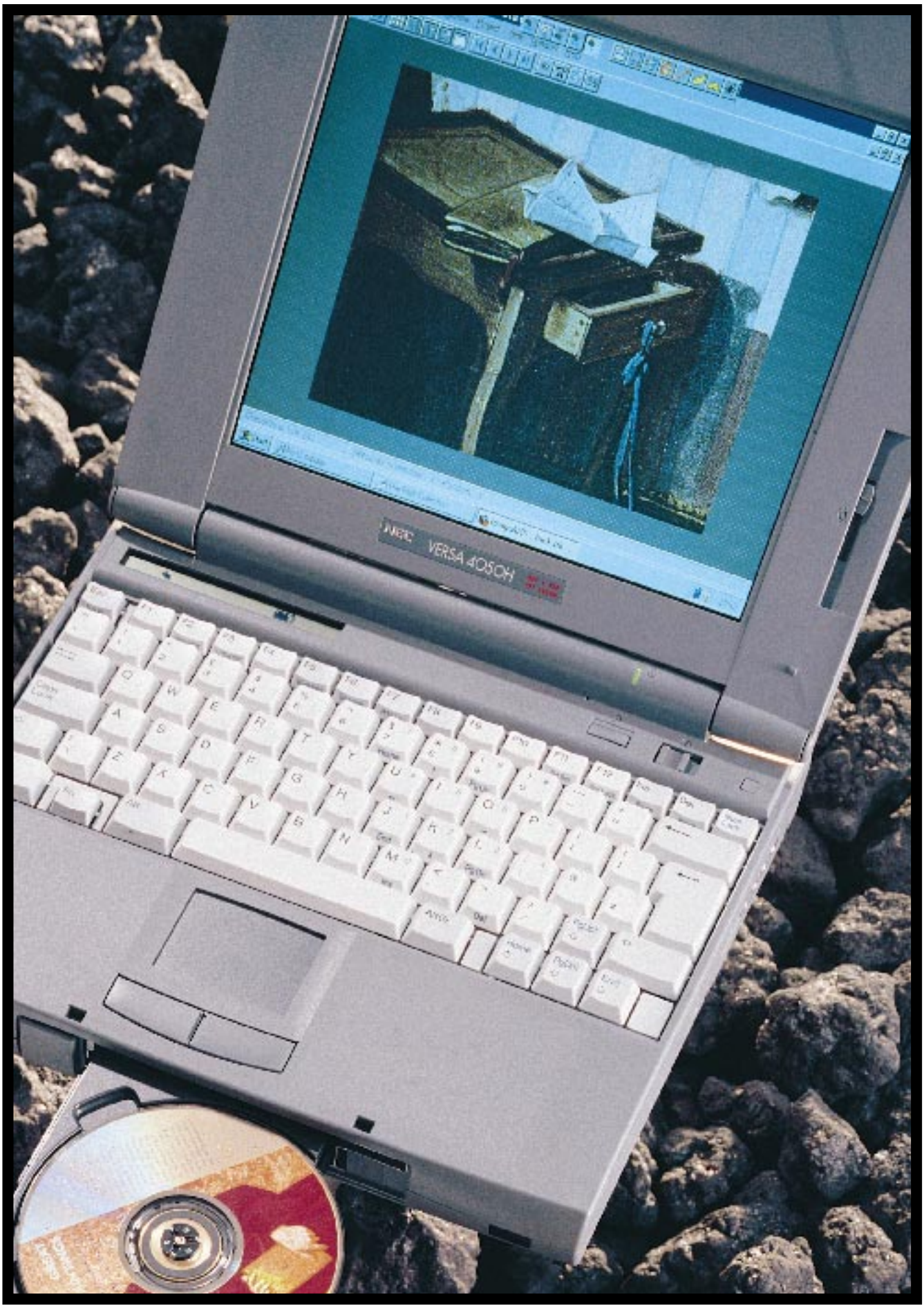
Normally in a *PCW* group test we have a clear winner — a product that stands out on price, performance, and build quality. Somewhat infuriatingly, the hard drives we tested here have very little to tell them apart. The SCSI drives in particular performed virtually identically, leaving a decision down to price.

Despite attempts by some manufacturers to stabilise them, hard drive prices currently depreciate at 9 to 11 percent per quarter, rendering quotes a little out of date. This said, at the beginning of January 1996, most of the 2Gb SCSI drives tested were available for around £550 and the 1Gb IDE drives for around £150. Shop around and you'll find equivalent drives from the major manufacturers available for virtually the same price.

Then there's the bigger problem of availability, where the market fluctuates violently. With individual users wanting to buy upgrades, along with PC assemblers ordering in quantity, there is currently a shortage of certain drives from certain manufacturers. Which manufacturers are short on which drives changes literally on a weekly basis, bringing your final choice down to which drive is cheapest and available on the day you want to buy. A final point to make is that hard drives do wear out, so it's worth choosing one with a decent warranty — five years is considered very good.

### PCW Contacts

**Adaptec** 01252 811200
**Datrontech** 01252 303500 for Promise
**Ideal Hardware** 0181 286 5000 for IBM and others
**Conner** 01628 777277
**Micropolis** 01734 751315
**Seagate** 01628 890366
**Fujitsu** 0181 606 4464
**Western Digital** 01372 360055
**Quantum** 01344 353500


VERSA 4050H

# PENTIUM 90MHZ NOTEBOOKS

**Time — and processor power — flies when your're in the business of notebooks: from 486DX-4 100MHz to 90MHz Pentium in just a year. Dylan Armbrust checks out what this year's Power User has on their lap.**

PCW Notebook Photography by David *Whyte*

## PENTIUM 90 CONTENTS



It has now been a full year since we had our last notebook group test and, wow, have things changed! Last year most of the notebooks we looked at fell into two categories: Entry Level and Power User. The highest spec we had then was a 486DX-4 100MHz CPU with 20Mb RAM. But over one year we find that yesterday's Power User is this year's processor Pee Wee. Not that this is unusual in the computer world, but the leap in power and capability of the more current notebooks stands out almost more than that of PC technology.

This year we decided to take a look at notebooks for this year's breed of Power User. Our specs were simple but, at the time of writing, leaning toward the upper end of the price scale. We asked that the notebook come with an Intel Pentium 90 CPU, TFT screen capable of 800 x 600 resolution (if available), a minimum of 16Mb RAM, an internal CD-ROM module and Windows 95. The size of the hard drive and anything else extra was up to the supplier.

What we received came as quite a surprise. First, not all the Pentium 90-based notebooks have TFT screens capable of 800 x 600 resolution, but the vast majority do. Second, eighty percent of the notebooks have trackpad pointers, with the remainder using stick technology. This is a truly remarkable shift in technology considering that roughly 95 percent of the notebooks we reviewed last year, with the exception of the Apple notebook, used a trackball pointer. One vendor even supplied us with a Pentium 100-based notebook so we decided to see how it compares.

The last big shift is the introduction of full multimedia capability and infra-red I/O ports. All the notebooks we review have on-board sound chips, mics and speakers. And in spite of the fact that we specified an internal CD-ROM it was fairly evident that it already was, or soon will be, a standard feature. The same goes for infra-red I/O capability. Not one notebook reviewed last year had infra-red I/O available. Now only the Adams and the Panasonic don't, but not for long as they, too, will shortly be introducing IR-capable notebooks.

We reviewed and tested 15 Power User notebooks to see how they compare. Our focus was on usability, durabiliy and versatility so don't be deceived by outright performance as it's not always the best indicator of value.

## ACi Amethyst

The ACi Amethyst is not, regrettably, as gem-like as its name alludes to. Its jet black exterior and box-like shape proved to be the most rudimentary of the group, a bit of a disappointment as the last Pentium 90 from ACi we looked at had a bit more style.

Its 11.3in dual scan screen looks impressive when you open the notebook but the display quality soon disappoints. The colour appears washed out and the edges of the monitor fade into white. The keyboard has large keys but the travel action is a bit stiff. A sizeable 3in wrist rest makes typing quite comfortable but the presence of gamepad joystick controls on the rest can be a distraction. Wedged between the game pad sits a responsive trackpad.

Like all our models the Amethyst comes with standard multimedia function. A fixed Teac dual speed (quad speed will be the standard at the time of press) CD-ROM sits under the left wrist rest. To right of it is the 3.5in FDD that can be swapped for an extra battery to give you extended use. A trio of audio jacks provide for microphone, headphone and speaker use. Or you can stick with the two built-in speakers if you're not fussy about sound quality.

The ACi comes with the expected power management utilities and there's a power suspend button allowing for deliberate power offs, but there's no suspend function if you close the top. The I/O consists of enhanced serial and parallel ports, a PS/2 port for keyboard or mouse, a docking port, and VGA port for an external monitor.

The Amethyst leaves the user with quite an impression… on one's lap. It was one of the largest notebooks in the group with a total weight of 3.5kg and a 30cm x 22.7cm x 5.4cm footprint.

**Dylan Armbrust**

### PCW Details

**ACi Amethyst**
**Price** £2467
**Contact** ACi 0181 830 1958

**Good Points** Cheap and durable.
**Bad Points** Poor quality screen and has game pad on the wrist rest.
**Conclusion** Budget-priced model for those users willing to compromise quality for functionality.

## Adams Accura Portable Plus

Style is of the essence when you look at the Accura. With charcoal grey colouring, a slightly sand-papery feel and a Pentium 100MHz CPU you can see that Adams wanted a unique and nice-looking machine.

The Accura has an impressive 11.4in TFT screen that comfortably accommodates an 800 x 600 resolution. Power, suspend, and brightness controls all sit just below the screen. Beware when you power up as the internal fan makes quite a racket before it settles down to an overly audible hum. Six multi-coloured LEDs, instead of the expected LCD, display system status such as recharging and HDD access. A 3.5in ergonomically designed wrist rest (the largest in the group test) with a centred trackpad is a nice touch.

The FDD and the Teac quad speed CD-ROM are interchangeable but not hot-swapable. A striking weakness was the plastic build quality of the FDD. Two Type II PC Card slots are housed in a shallow bay which could prove awkward in crowded situations such as an airplane seat. The HDD is only 543Mb but can easily be upgraded. The I/O consists of the usual single serial, parallel, VGA, and PS/2 port at the back. Headphone, mic and speaker jacks are positioned on the front and there's also an in-built mic on the notebook, but I'd avoid using it as the noise from the fan overpowers any recording. The Adams was also one of only two machines that didn't have an IR port, but future models are expected to include it.

In terms of performance the Adams didn't fare well, considering it's a Pentium 100. The Doom 2 score was also unexpectedly lower than some of the P90s. One solid plus is that it only weighs 2.9kg (perhaps a result of its thin plastic build) making it one of the lightest in the group.

**Dylan Armbrust**

### PCW Details

**Adams Accura Portable Plus**
**Price** £3198
**Contact** Adams Computers 0161 877 8822

**Good Points** Ergonomic wrist rest. 11.8in screen. Looks great.
**Bad Points** Cheap plastic latches. Loud fan. No IR port.
**Conclusion** A good performer with 100MHz chip at 90MHz price, but overall performance isn't markedly better.

## Compaq LTE 5100

There's no awkward edging, nooks or crannies on the Compaq, making it smooth to handle and stylish in appearance. The switches, keys and EasyPoint II pointing device glide effortlessly, though the bevelled right and left click buttons require a firm thumb. Air vents above the keyboard leave no room for a wrist rest below the keyboard, just an inch or so of "palm rest".

Three front-loading sections consist of the MultiBay, the dedicated hard drive bay (with 810Mb HDD) and the main NiMH battery pack. The versatility of the MultiBay means it will support any one of the following at any one time: CD-ROM drive, disk drive, a hard drive or a second battery pack.

The PC Card slot is easily accessible and supports one Type III, two Type I or two Type II cards. All the usual I/O ports are present along with an external options connector for the MultiBay Expansion Base (docking station) or optional MPEG and TV Video Adaptor. An infra-red port can also be found at the rear.

Although we requested only 16Mb of RAM, the review machine came with 24Mb (which inflated the quoted price as 8Mb is in fact the standard) and you can expand to a maximum 72Mb.

The LTE 5100 has both internal and external audio capabilities and, to round off good design, the two speakers of the 16-bit stereo sound system are located left and right of the display.

It outperformed all the other review notebooks in overall testing but, oddly, it stumbled in the Doom 2 test. This could in part be due to Compaq's use of 1Mb of DRAM for the video whereas a number of its competitors opted for 1 or 2Mb of VRAM. However, for notebooks with such a high spec it's Windows performance that's important and Compaq has optimised the LTE 5100 precisely for this.

**Joanna Scott**

### PCW Details

**Compaq LTE 5100**
**Price** £5,330
**Contact** Compaq 0181 332 3000

**Good Points** Versatile, good power management utilities and outstanding Windows performance.
**Bad Points** High price — though less RAM will make it cheaper.
**Conclusion** An excellent all-rounder for the smooth operator.

## DFI Explorer

The Explorer, at £2695, was one the cheaper notebooks in the group test. It was also one of the fastest, coming in sixth in overall results.

Externally there's very little difference between the DFI, the Evesham and the Twinhead. However, the make-up of the internal components are what set it apart. A 540Mb HDD and Teac dual speed CD-ROM sit just below the wrist rest. The CD-ROM swaps easily with the 3.5in FDD but you'll have to power down the notebook beforehand.

There is also the option of running the FDD externally and DFI provides the cables for this. The Explorer's other unique features are the wide power button and light grey coloured trackpad as well as the external moldings of the two speakers.

The 10.4in TFT screen didn't disappoint in its offering of rich colour. This plus was really noticeable when running the Doom 2 test. In terms of performance the DFI placed well with a score of 31.46fps on Doom 2 and an overall result of 1.34. Much of the good score can be attributed to the presence of 2Mb of VRAM for the graphics as opposed to 1Mb found in some of the other models.

The I/O of the DFI consists of an IR, PS/2, game/MIDI and enhanced serial and parallel ports. It can also accommodate one Type III or two Type II PC Cards and has three sound jacks for a microphone, external speakers and headphones. It also has 16-bit stereo sound capability but you won't appreciate sound quality via the small on-board speakers. The keys on the keyboard are large and fairly quiet but typing on the lower keys is somewhat impeded by the lip of the track pad.

The Explorer comes with the normal BIOS-based power management utilities and is loaded with Windows 95.

**Dylan Armbrust**

### PCW Details

**DFI Explorer**
**Price** £2695
**Contact** DFI 0181 776 5555

**Good Points** Fairly quick and has 2Mb VRAM.
**Bad Points** Trackpad impedes typing.
**Conclusion** It works well and is fairly priced.

## Elonex Pro 410CDT

Open up the Elonex, take a look at the Fujitsu next to it and you start to get a feeling of *déjà vu*. The Elonex is basically the same machine as the Fujitsu/ICL shorn of its sleek silver grey coating and sculptured buttons. There are also one or two other cosmetic differences on the track pad.

But as our test results show, beauty is more than skin deep as the Elonex comfortably outperformed the Fujitsu which surprisingly came bottom.

However, neither machine could be described as easy on the eye, and the Elonex is even worse in this respect, but taking off the cosmetic (Swedish designed) frills also shaves *£500* off the price.

Whatever the looks, the Elonex does have some practical design features. All the drives are easily slotted in and out but the catches to release them proved fiddly to operate and being underneath mean that the machine has to be turned over — not always practical if you are in the middle of work. Better is the absence of an external transformer: instead, a two-pin plug goes directly into the battery pack.

PC cards are slotted in behind a pop downslide in flap which felt flimsy and could get snapped off. Far better would be the tough sprung flaps that other manufacturers are starting to use.

Multimedia ports include stereo speaker out and mic in. The built-in speakers only give moderate performance.The screen is a standard 10.4in TFT which is respectable enough with an even presentation but no external controls for setting screen brightness.

As a typing machine the Elonex fared below average with large amounts of bounce, lack of feel and a curious bump in the middle of the keyboard giving the whole board a strange feel. However, the track pad was positive and the mouse buttons each side responded well once users had adjusted to their placement.

A mid-price machine bringing average performance and features for your money.

**PJ Fisher**

### PCW Details

**Elonex Pro 410CDT**
**Price** £2,710 + VAT
**Contact** Elonex 0181 452 4444

**Good Points** Good value, well built.
**Bad Points** Numb keyboard, flawed port design, tricky catches.
**Conclusion** Won't get anyone excited.

## Enact 5400 Series

It's difficult not to avert one's eyes upon the first look at the Enact as it was one of the most unprepossessing notebooks in the group test. In fact, it also has an ugly sibling in the name of the ACi. This is because they are both badged goods and are very similar to each other.

The black, angular exterior highlights its 30cm x 22.7cm x 5.4cm dimensions and its 3.5kg weight. Compared to the other notebooks in the review this was one of the thickest and heaviest. The I/O, located at the rear, consists of VGA, serial, parallel, and PS/2 ports. On the left side an IR , MIDI/game port and cooling fan reside. Up front are a fixed Teac dual speed CD-ROM and removable floppy disk drive. There's a 540Mb hard disk drive and the RAM can only be expanded to a maximum of 32Mb. No module swapping is necessary. And finally, on the right side, are audio jacks for headphones or speakers, line-in and mics as well as a PC Card bay that can hold one Type I or two Type II cards.

The 10.4in monitor only supports 640 x 480 resolution and the colour, in spite of it being TFT, appeared a bit washed out, even with adjustment. The keyboard is large and clear but the travel action is a bit stiff.

There's a 3in wrist rest but, like the ACi, its value is diminished by the presence of built-in joystick features. In the centre of the wrist rest lies a pleasantly sensitive trackpad. The Enact also has the expected on-board microphone and speakers in the upper right and left corners of the base that make use of the 16-bit sound capability. Portable power consists of a NiMH battery with a surprisingly low 30 minute operating time, but you can purchase a rather large and heavy external battery attachment to give you three hours of use, if you feel up to lugging it about.

**Dylan Armbrust**

### PCW Details

**Enact 5400 Series**
**Price** £2599
**Contact** Enact 01952 428888

**Good Points** No swapping modules.
**Bad Points** Screen quality a bit washed out. Heavy.
**Conclusion** A durable budget model suited for duty in a loan pool.

## Evesham Voyager II

With a name like Voyager II one would expect this machine to stand out and be unique. Unfortunately, this isn't the case. What we have here is a badged notebook that is an identical twin to the Twinhead and a close cousin to the DFI. But they come from a good family so there's not much to worry about.

The Evesham's charcoal grey hue and semi-stylish molding is somewhat marred by the poor label. It looks like someone used a craft knife around the edges before they mounted it. But this is the only distracting external feature we could find. Otherwise, the Voyager II has the usual complement of I/O ports expected in a notebook of this level.

Like its twin, it comes with a flush PC Card bay that holds one Type I or two Type II cards, a 10.4in TFT screen, and a Li Ion battery. Also present is the same keyboard and trackpad, as well as the same spacebar impediment. But this is where the similarity stops. Our model had a Panasonic quad speed CD-ROM instead of a dual speed and a 528Mb hard drive. Our review model came with 16Mb of RAM but it is expandable up to 64Mb.

The Evesham's performance was more than respectable as it placed fourth in the pack. Oddly, this was slightly better than its "relations" but only marginally. Similarity is also the case when you look at the Doom 2 benchmarks where it had an identical score to the Twinhead.

The Evesham is retailing for £2677 which is fairly low in relation to the other notebooks in the group. It comes loaded with all relevant drivers, Windows 95, MPEG player and communications software.

**Dylan Armbrust**

### PCW Details

**Evesham Voyager II**
**Price** £2677
**Contact** Evesham Micros 01386 765500

**Good Points** Quad speed CD-ROM.
**Bad Points** Identical to the DFI and Twinhead. Trackpad impedes space bar.
**Conclusion** Solid, durable but not unique.

## Fujitsu ICL Ergolite 590CD

As we know, the Ergolite 590CD shares casing and components with the cheaper Elonex model in the group. But for your extra £600 you get some Swedish design twirls and a smart silver grey finish which certainly makes it distinctive among our group. Despite this, the ICL doesn't cut the mustard as a piece of modern design. Too much of it is design for its own sake and not for practical ergonomic reasons. The Elonex works just as well without the frillls. (Ironically, the entry level 486 Ergolite is a much more pleasing machine visually.)

Like its cousin the Fujitsu performs well in areas such as screen technology with a crisp, bright image, and the trackpad worked smoothly although the mouse buttons seemed stiff, requiring a firm push to activate windows.

The keyboard was disappointing, revealing far more bounce than the Elonex (which suggests variances in quality control) and threatening tired wrists when inputting heavy data or text.

Modules slotted in and out with ease but unlike the Elonex you were less likely to lose your fingernails on the locks which again suggests variable quality control.

The Fujitsu does score with a number of software utilities designed to make life on the road easier. Most of these are designed around ICL's TeamOffice and include remote access, Internet and email programs. You also get some bundled CD-ROM software pre-installed including Encarta and a DOS-based game, Lost Eden.

Fujitsu would probably argue that all this bundled software justifies the extra price. Maybe; but many buyers would rather spend their cash on extra RAM or hardware specification.

This is a machine which is certainly competent and will gain a number of buyers, but it will hardly establish Fujitsu ICL in the front rank of notebook suppliers. It does nothing badly but it in the end it is too expensive for what it offers and fell down badly in our performance tests.

If you're spending your own money on a notebook you tend to be a lot more cautious about what you buy. As it stands, the Fujitsu is comfortably outdistanced either on price or features by others in this group test.

**PJ Fisher**

### PCW Details

**Fujitsu ICL Ergolite 590CD**
**Price** £3295 +VAT
**Contact** Fujitsu 01344 472000

**Good Points** Crisp screen, attractive casing, good range of software.
**Bad Points** Pricing, keyboard, performance.
**Conclusion** Competent. If you were given one of these you wouldn't complain.

## Gateway Solo V90

One look at the Gateway Solo and you know it's a nice machine. Even though it was a pre-production model, it proved itself worthy of praise.

Gateway appears to have put some thought into the design of the Solo. With a 2in profile its size is marginally larger than a sheet of A4, and a weight of 2.9kg made it one of the most compact in the group. In terms of I/O it comes with all the expected serial, parallel, audio, VGA, PS/2, and IR ports, plus there are two Type II PC Card slots and a docking port connection.

Once open you find a clear, easy-to -se keyboard with sensitive travel action. A full 3.5in wrist rest with an off centre EZ Pad complete the ergonomic circle. The Solo conformed perfectly with our spec. Its 10.2in TFT screen provided rich colour depth and brightness. The dual-speed, front-facing CD-ROM swaps with the FDD, but they can't be hot-swapped. One of the nice design touches is the integrated speakers on the hinge joint that automatically face you when you open the screen.

All the interchanging modules were easily accessible and simple to change. This was the same for the RAM. We were accidentally sent 8Mb of RAM and needed to upgrade to 16Mb, so when Gateway sent another 8Mb all it entailed to install was popping open a cover and sliding in the RAM. Yet another nice touch is the direct plug-in on the Li Ion batttery to allow fast recharge. Gateway claims that its battery life extends to five hours, the longest of the group, but we didn't have time to challenge this in the test.

The Gateway did not perform well on the Doom2 Test, where it managed a mere 22.8fps, or in the overall results.

**Dylan Armbrust**

### PCW Details

**Gateway Solo V90**
**Price** £2699.00
**Contact** Gateway 2000; 0800 973120

**Good Points** Nice design touches and compact build.
**Bad Points** Performance is slow.
**Conclusion** A budget price but has a quality build and design.

## IBM ThinkPad 760CD

Just when Toshiba thought it had created the world's most desirable notebook, IBM went and pooped them with the launch of the 760CD with the biggest TFT screen yet seen on a notebook.

And it is quite a shock when you open the lid on the 760CD for the first time. Turn it on and it's a revelation. With a 12.1in screen running in 800 x 600 you have a machine that could realistically be used for layout and multimedia work as well as double up nicely as a presentation unit for small groups. Microphone and headphone jacks mark this out as a true multimedia machine.

The screen is crystal clear from edge to edge although the cursor still displays a degree of ghosting which is disappointing given the price of this IBM. The screen is easily viewable right down to an angle of approximtely 45 degrees, again useful for presentation work.

Build quality and finish is immaculate — no rough edges or poor machining was in evidence. Only a loose volume control let the side down. Quality is evident inside the machine too where the modular policy that characterises the ThinkPad series continues. I have no problem with lifting the keyboard to access components or switch between drives (an easy task) although others prefer to slide out modules. However, care should always be taken when the keyboard is raised to avoid damage. The keyboard itself defaults to a raised angle which can be easily switched if you prefer a flat typing position. Two stereo speakers are encased in the keyboard moulding and provide adequate sound for CDs, multimedia etc.

The keyboard is outstanding. It feels like silk; it's beautifully weighted and is even better when in raised position. The wristpad is perhaps a little small but it makes for an extremely compact machine ( 29.7cm x 21cm x 5.43 cm) given the spec. It's also light at only 3.4kg fully laden. The tactile matt black finish looks gorgeous but is prone to marks.

Quad speed drive, 1.3Gb hard disk, two IRDA ports... This is a fabulous machine, but more than £6000 is a lot of anyone's money. If money is no object…

**PJ Fisher**

### PCW Details

**IBM ThinkPad 760CD**
**Price** £5745
**Contact** IBM 0345 727272

**Good Points** Fantastic build quality, brilliant screen, terrific keyboard
**Bad Points** Fantastic price.
**Conclusion** If you can afford it, this is probably the finest notebook in the world.

## NEC Versa 4050H

This battleship grey notebook stands out in this group test, not only in performance but design too. The NEC came in a respectably high second in both the Doom 2 and the overall test results.

Not only is it fast, but it's also a joy to use. Externally, you'll find that the front loading FDD and dual speed CD-ROM are interchangeable. The Li Ion battery and 720Mb HDD are easily accessed from the bottom of the unit. If you feel like exploring you can remove the hard drive to access and upgrade the RAM. Our model came with a whopping 20Mb of RAM, making it more expensive, but 8Mb is the NEC standard. If you have the urge and cash you can expand the RAM to a maximum 40Mb. The Versa displays one of its more forward-looking aspects with the presence of two IR ports; one on the front and one in the rear.

The I/O at the rear is comprised of your standard serial, parallel, VGA, PS/2 and proprietary docking ports. On the left side there's a bay for one Type III or two Type II PC Cards. On the right are headphone, speaker and mic jacks with volume control that make use of the NECs 16-bit sound features, but the Versa also has two speakers mounted on the left and right of the screen.

One of the little extras to be found are the two foldout legs on the bottom of the unit that help place the keyboard on an angle for more ergonomic typing. The keyboard has large keys and a big, well-placed Return key. There is a recess by the trackpad to ensure that typing is not impeded when using the space bar.

Other features include excellent power management utilities, a 10.4in TFT screen capable of 800 x 600 resolution, and a dedicated sleep button by the power switch.Plus, with proper utilities adjustment, you can get up to five hours of battery life, one of the longest in the group.

**Dylan Armbrust**

### PCW Details

**NEC Versa 4050H**

**Price** £4545 (with 20Mb RAM)
**Contact** NEC 0181 993 8111

**Good Points** Well built, excellent utilities, and the small touches really make an impact.
**Bad Points** For something this good, it could do with a bigger screen.
**Conclusion** An excellent machine that's well worth its price.

## Olivetti Echos P90

We got the Echos P90, but what we really wanted to review was the Echos P90s with its 11.8in TFT screen with 800 x 600 resolution. As it wasn't available when we did this group test , we took a look at the next best thing.

The P90 is a jet black, solidly built machine made to take a few knocks and bounces. Our model fulfilled most of the spec except that the 10.4in TFT screen could only support a maximum resolution of 640 x 480. The subsystem consists of a 810Mb HDD and a FDD that can operate externally or can be swapped with the dual speed CD-ROM. The RAM can be upgraded to a maximum of 32Mb.

Unlike most of the notebooks in our review the front of the Olivetti is clear of any drive bays or ports. The CD-ROM or FDD modules and the battery bay (holding a NiMH battery) are located on the right of the machine. On the left is the PC Card bay with two Type II slots, plus a speaker and mic jack for recording and playback and the access plate for the HDD. The rear holds the usual VGA, PS/2, serial, parallel, docking station and IR ports. One noticeably poor aspect of the Olivetti is the cheap quality of the bay and port cover latches, which fall out whenever you open one.

The no frills theme also applies to the Echos when you open it up — but don't let looks fool you. It may be plain but the keyboard has large, easy-to-use keys with very quiet travel action and a bevelled trackpad. The 10.4in TFT screen provided some of the best colour contrasts and it was one of the lightest (2.9kg) and smallest (28.6cm x 22.8cm x 49cm) notebooks in the group. This is a solid machine and if the upcoming Echos P90s is anything like it, it will be worth a look.

**Dylan Armbrust**

### PCW Details

**Olivetti Echos P90**

**Price** £3499.00
**Contact:** Olivetti 0181 785 6666

**Good Points** Well built, very compact and excellent screen colour.
**Bad Points** Cheap latches. A bit expensive for its class.
**Conclusion** A quality machine that will last, and a good buy if you're willing to spend a bit extra.

## Panasonic CF-41QTA4

At £4499 the Panasonic is the most numerically labelled and overpriced notebook of the group. It doesn't offer anything substantially better than most of the other models and, in fact, is still carrying some old technology.

The 29cm x 23.5cm x 59cm dimensions and 3.6kg weight make it one of the largest notebooks around. The shape is a bit box-like but the build quality is good. On the left side is the PC Card bay that holds the standard two Type II or one Type III cards. The rear of the unit carries a VGA, PS/2, serial, parallel, and docking station port, but IR capability isn't present on this model. There's also the standard line-in, line-out, and microphone jacks as well. A modular FDD is located on the right side of the notebook that swaps with the main battery pack or a FMV (Full Motion Video) module, which wasn't supplied with our review unit.

Upon lifting the display panel two features strike you. There's no wrist rest, which is now the norm, and it has a trackball, the only one in the group. The trackball, which is a bit fiddly, isn't necessarily a bad thing but the technology is a bit old and the trend is now with trackpads. The keyboard is clear, quiet, and easy to use. The 10.4in TFT display could only support 640 x 480 resolution but the quality was excellent. The double speed CD-ROM can be found under the keyboard, but again the technology and design seem a bit outdated as a caddy is required. This makes accessing, loading and playing the CD-ROM time consuming compared to the standard tray-loading models and can expose the user to the common problem of losing or breaking loose components..

On the up-side, it comes with a 1Gb HDD, can expand to 48Mb of RAM and has a three-year warranty.

**Dylan Armbrust**

### PCW Details

**Panasonic CF-41QTA4**
**Price** £4499
**Contact** Panasonic 0500 404041

**Good Points** Good display. Three-year warranty.
**Bad Points** Big and heavy with old technology.
**Conclusion** Not worth the price. Surely Panasonic can do better?

## Toshiba Satellite Pro 410CDT

Toshiba shows no sign of ditching its familiar dull grey exteriors and so it is with the new Satellite Pro 410CDT. The finish may not be as stunning as the ThinkPad but is more likely to survive wear and tear. This was a pre-production model so it is hoped the finish on some of the fittings such as PC Card slot doors will be higher on final units.

The screen size of 11.3 inches is beaten by the IBM but it is a match for the ThinkPad in terms of colour depth and sharpness, and passed the 45 degree angle test. This is a machine that grows on you — you find yourself admiring its solid feel and sculptured looks after a while. It is a smart piece of industrial design.

The palm rest brings to mind the Apple PowerBooks, which pioneered this design, and this is complemented by a pointer which was smoother than the IBM.

The mouse buttons are awkward, making one-handed operation awkward. They look stylish but take some getting used to. The keyboard was disappointing, at least in this pre-production model, with a considerable degree of bounce and flex, and noisy too. It was quite easy to make mistakes when typing. There was no way of raising the keyboard or machine for a more relaxed typing angle.

The swappable CD and floppy drive are stored on the right side and engage positively. On the other side is the PC Card slot and serial and mouse ports. An infra-red port is found on the rear.

A nice touch is the built-in mains transformer which adds to the weight (3.4kg fully laden) but it makes for a neater connection to the mains when needed. Only one speaker is included but a jack plug provides sound out.

This is an expensive machine but one that performs well: it should be given serious consideration by high-end buyers. Existing Toshiba owners looking to upgrade will feel at home.

**PJ Fisher**

### PCW Details

**Toshiba Satellite Pro 410CDT**
**Price** £4490
**Contact** Toshiba 01932 828828

**Good Points** Clean design, large screen, well made.
**Bad Points** Bouncy keyboard, tricky mouse buttons.
**Conclusion** An advanced machine let down by some design quirks.

## Twinhead Slimnote 890TX

One gets an overwhelming sense of *déjà vu* when looking at the Slimnote 890TX. This is due to the fact that it's an exact replica of both the DFI and the Evesham notebooks, except for the colour of a few buttons. In other words, it's just another badged notebook.

But this doesn't have to be a bad thing and not all the internal components are identical. Our review model came with a respectable 810Mb hard drive and a Toshiba dual speed CD-ROM module. The 3.5in floppy disk drive and CD-ROM are interchangeable but you have the option to use the floppy as an external device. This allows you to operate the CD-ROM and floppy simultaneously.

The Slimnote has a TFT screen that supports a resolution of 800 x 600 at 64,000 colours. The depth and richness of colour was excellent and this was reaffirmed when running the Doom2 test.

When looking at an open Slimnote you find that the simple keyboard layout and sizable wrist rest, with a trackpad in the centre, come as a bonus. The keyboard travel action is light and easy but the spacebar is slightly lower than the lip of the trackpad and this can be a bit of an obstacle in intensive typing.

Like that of the DFI and the Evesham, the Slimnote provides for easy module interchangeability and we found no difficulty with this. Its I/O configuration consists of an enhanced serial and parallel port, VGA , PS/2, MIDI, and docking station ports. There's a Lithium Ion rather than a NiMH battery.

Also present was an IrDA compliant infra-red port for wireless data transmission. By the time this review goes to press all Twinheads will come loaded with Windows 95 and the usual power management utilities, instead of the Windows 3.11 ours came with.

**Dylan Armbrust**

### PCW Details

**Twinhead Slimnote 890TX**

**Price** £3330

**Contact** Twinhead 01256 56066

**Good Points** Large keyboard with simple layout.

**Bad Points** Trackpad design interferes with typing.

**Conclusion** A solid machine with a good display but a bit expensive compared to its sister clones.

## Ten tips for buying and using notebooks

1. "Try before you buy" is the maxim of the day when selecting a notebook. The variety, in terms of design and performance, is astounding.

2. One of the best ways to test a portable's suitability for Windows use is also one of the simplest. Fire up the included Solitaire game and have a go. If you find it hard to move the cards around then it will probably be the same with cutting and pasting blocks of text and so on.

3. Assess your needs carefully. Do you need a faster processor or a better screen? If you mostly do word processing then look for the notebook with the best keyboard and pointing device. If you are dealing with a lot of graphics or making a lot of presentations then screen quality becomes an issue.

4. Ensure you have enough RAM to run your system well. Eight megabytes is good for DOS or Windows 3.11 applications, but 16Mb is ideal for those using Windows 95.

5. Build quality is important. Notebooks assigned to particular individuals for long periods will generally by treated better than those which pass through many hands. In the latter case, it is important to buy notebooks that will take a real hammering. This is more important in the long term than a better screen or bigger disk.

6. Removable floppy disk drives can allow longer times between recharges if the bay accommodates a second battery. The absence of a floppy can also avoid viruses and games which clog the disk and can mess up the configuration setup. File transfer can be done by the system's administration staff centrally.

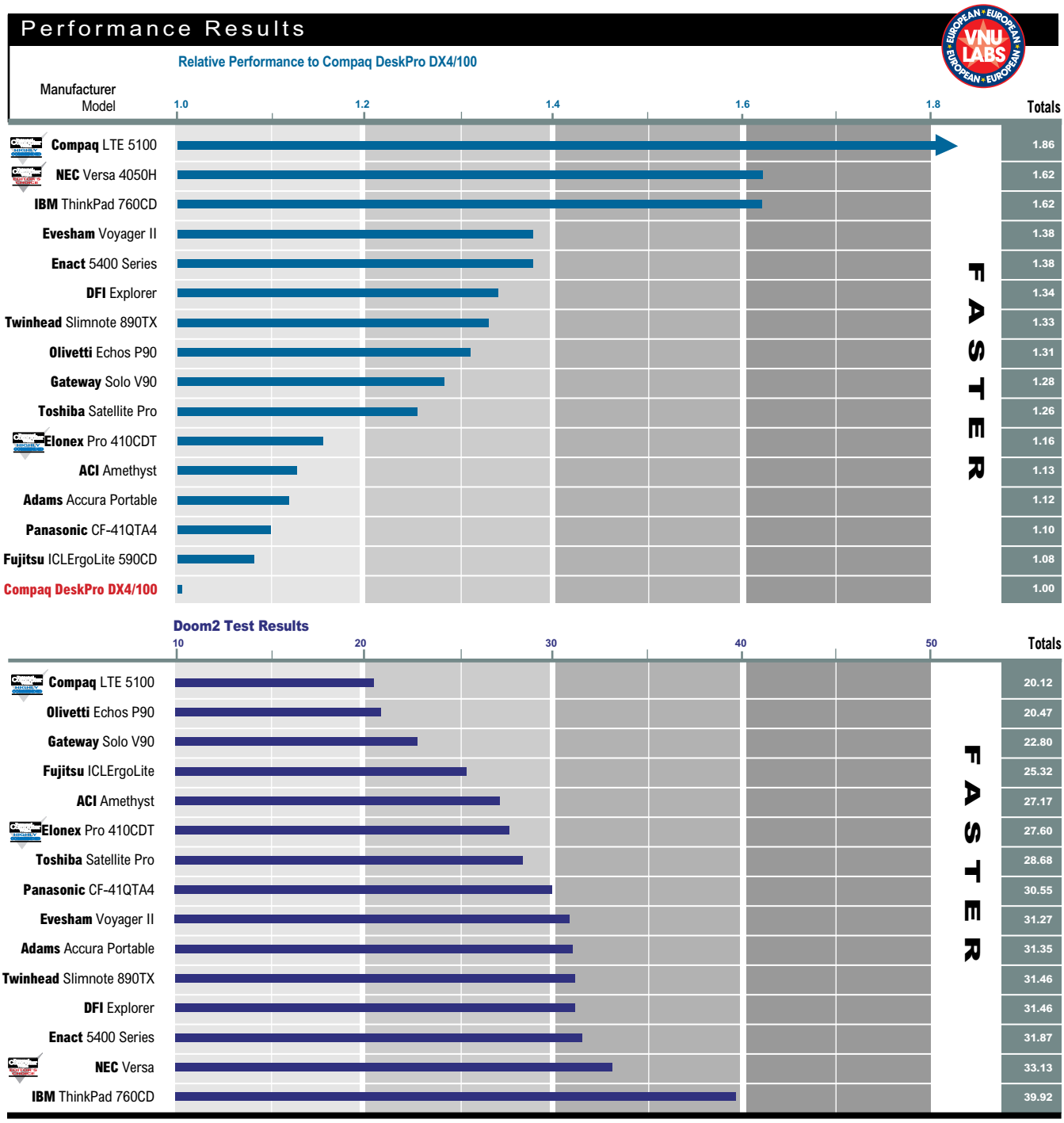
7. Generally speaking, it is best to buy the spec you'll need for the long term at the outset than to upgrade later. With notebooks being so modular, it is tempting to buy a base model and upgrade as funds allow. The drawback is overall cost. Nearly all major components are proprietary and considerably more expensive than their desktop counterparts. RAM prices are one example. You can be expected to pay £100 per megabyte, compared with around £30/Mb for standard SIMMs.

8. Upgrading can prove to be tricky. Sometimes it's easy, sometimes it's not. Many manufacturers insist that their own staff or recognised engineers perform the upgrade. This would, naturally, add expense to the overall cost of the unit and take it out of circulation while it's being worked on. Check with your dealer or the manufacturer to clarify where you would stand.

9. The display becomes very important if the notebook is to be used by large groups of people. The viewing angle is much more restricted with a dual-scan screen than with TFT, which allows more people to see the screen at once.

10. In the early days many batteries could be recharged externally with a separate charger — a spare could be charged up while the main battery was in use and the two later swapped over. The trend today seems to be against this as none of the manufacturers in this group supplied external chargers. For anyone managing a large group of portables, the logistics of keeping everyone supplied with power can become a nightmare. Check with your supplier before you buy.

## Performance Results




## Editor's Choice

Change was the watchword for this year's notebook group test, particularly for the Power User. The standard presence of high-quality TFT screens, quad speed CD-ROM modules, infra-red ports, trackpads and fast CPUs in this category are an indication, going by last year's round-up, of what will be the norm next year.

One thing that was more noticeable in this time was the number of near identical machines, such as the ACi and the Enact. These were only physically differentiated, in some cases, by the label on the cover but their performance and price were what set them apart. This fact, however, didn't sway our judgement in selecting our Editor's Choice.

We looked at build quality, performance and extras, like enhanced power management software and external design. Price was less of a consideration as we knew our minimum spec, particularly the TFT screen and 16Mb RAM, would automatically place the notebooks into a higher, more corporate, cost category. There isn't an all-in-one notebook that combines all of the most ideal features, but our choice comes close.

Editor's Choice is the NEC Versa 4050H. It's an impressive notebook designed with portability in mind. Its dimensions are small and it's lightweight. The TFT screen gave rich, resilient colour that allowed for viewing from wide angles. Module swapping was carefree and the keyboard was a joy to use. The overall shape combines with little extras, like fold-out feet that place the keyboard on an angle for easier typing, and an excellent bundle of power management utilities that go well beyond the standard BIOS-based systems. Add to this the versatility of two infra-red ports and its speedy performance and you have an excellent, but rather expensive, notebook.

Two other notebooks that impressed us, and thus come Highly Commended, are the Compaq LTE 5100 and the Elonex NB-590/I. The Compaq was chosen for its solid build quality, strong warranty, and its superior Windows 95 configuration which contributed to its topping the overall performance list. And finally, we chose the Elonex because it combined durability and excellent design, in particular its A/C power and battery swapping modules, with an affordable price tag when compared to its twin, the Fujitsu Ergo Pro.

## Notebook (TCP) Chip Technology

The design technology behind a chip is now becoming almost as important as the speed and power of the chip itself. This is especially the case with the ever increasing use of portable computers and the simultaneous demand that they become smaller, lighter, and more energy efficient. The new breed of Intel processors now being produced appear to be addressing these needs.

In the past notebook computers faced the dilemma of a) quickly running out of power while operating on the battery, b) squeezing a large chip into a compact space, and c) preventing the CPU from overheating. At most, a notebook would run on battery power for an hour or slightly more, due to the fact that desktop and notebook PCs used the same type of chip. So, a notebook faced the same level of power consumption as a desktop did. The advent of better battery technology [see page XXX) and power management utility software combined to give longer run time while on the move, but still not enough to make portable use practical.

Also, the size of the chip and the amount of heat emitted had to be tackled. The older ceramic-encased Pentiums, such as the P60 and the P66, and the 486 line did not accommodate themselves ideally for portable use as they consumed an average of 13-16 Watts. Fans, combined with heat sinks, were used to keep the chip from overheating. This in turn consumed power and the vicious cycle of short battery life was continued.

However, there is new line of Intel chips specifically designed for notebook use. Tape Carrier Packaging (TCP) is Intel's newest chip design for portable computers. TCP involves a unique process of placing a thin protective plastic coating directly on the silicon, instead of encasing it in ceramic and plastic. This allows for the processor to weigh less than a gram and makes its thickness come to less than 1mm, or about half the thickness of a 5p coin. As a result, the heat generated from the chip is no longer trapped inside an insulating material but, instead, is in direct contact with an array of solder plugs in the motherboard. These plugs draw heat away from the chip to the opposite side of the motherboard where the heat can dissipate, usually into some heat absorbent material, thus eliminating the need for mechanical fans to cool the computer.

Another feature of TCP chips is Intel's System Management Mode (SMM) and SL Technology. These chips only use 2.9 volts internally, as opposed to 3.3v on current and 5v on older chips, to consume an average of 3 to 4 Watts. With the SL Technology, the CPU's clock can be stopped when not in use, putting it into sleep mode where it consumes less than 1 Watt of power. Combine this with the SMM's ability to shut down notebook peripherals when not in use and return them to the prior operating state when needed, and you have yourself a very sophisticated chip. Now all of Intel's chips, starting from the Pentium 75, have the SMM and SL Technology built in and that is why we see the use of non-TCP chips, such as the Pentium 100MHz, being used in notebooks.

The use of TCP is not, regrettably, as widespread as one would think. It's currently taken advantage of only by the larger notebook manufacturers like Compaq, IBM and Toshiba, but the smaller clone vendors, like Adams and Hi-Grade, appear to have bypassed this technology altogether. The primary reason is cost. Robotic equipment is required to install TCP chips on a motherboard and the expense is out of reach for these smaller vendors.

The second reason is flexibility. Currently, only the Pentium 75, 90 and 120MHz chips are available in TCP and clone vendors like to be ahead of the game. That is why one sees the notebooks with Pentium 100 and 133MHz CPUs on the market. This may give the vendors a certain cachet but leaves the notebook prone to "hot bottom" syndrome and higher power consumption because they use ceramic-encased desktop chips. They don't get the maximum efficiency possible because the best technology isn't applied.

## Windows 95 testing

The VNU European Labs Windows 95 tests measure performance using a mixture of standard DOS and Windows applications. Although DOS programs are still tested, they have a lower weighting than was used in the old Windows 3.11 test, and DOS figures are now merged into the overall score rather than being presented separately.

Previous lab tests used a normalised test platform that included changes to the swap file and other system settings. To better measure the additional tuning provided by manufacturers (e.g. 32-bit FAT for faster disk performance) our new tests run with very light system reconfiguration: specifically, installation of PostScript printer drivers and disabling the undelete facility in the Recycling bin. As WordPerfect for DOS requires a sizeable amount of conventional memory and EMS, slight adjustments are made to CONFIG.SYS (to remove unnecessary DOS sound card drivers and NOEMS statements) before running it.

The new approach to testing PCs has highlighted greater speed variations across relatively similar hardware platforms. Although the processors in all bar one of these machines are identical, and despite all of them running with 16Mb-24Mb of RAM, there is an overall difference of roughly three quarters of a point between the fastest and slowest. We mostly attribute these differences to various classes of display and disk hardware, but note that certain models which are virtually identical gained very different scores owing to poor software configuration. Careless software installation makes a dramatic difference in Windows 95; like a bad apple, one 16-bit driver loaded for a sound card or display adaptor can cripple performance across the entire application suite. Encouragingly, several machines are now using the "full" version of Windows 95 rather than the upgrade, and these seemed to fare better in the tests. On the other side, manufacturers are still putting old 16-bit drivers on their machines for additional hardware such as trackpads. When you buy any of them, it's clearly still worth going through your configurations and pruning where necessary, Win95 or not.

The Doom2 demo test, although not an official benchmark, is a good indicator of hard disk and graphics performance as no frames in the demo sequence are dropped. The test consists of a short demo lasting about two minutes and it can be run on any computer loaded with Doom 2. To run the test ensure you are running only in DOS, not from a DOS window, and first configure the setup (by running setup.exe) to omit all sound and, once the game has loaded, set the screen size to full (i.e. no ammo/health status bar should be present). Then quit the game and enter the following command:

```
c:\DOOM2\doom2 -timedemo demo1
```

After the sequence has run, a final score (of realtics) is divided by a constant (gametics) and multiplied by 35 to give a frames per second (fps) rate. The higher the fps the better.

**Julian Evans**

## The IrDA specification

Linking computers together makes them more powerful. It also ties them to one place. Infra-red communications has the benefit of communication without the ties of a docking station or a network PC Card. In theory, you can plonk your computer on your desk and instantly have access to your network, printer and modem. No wires, no fuss. All this is done by having the computer communicate using what is effectively Morse code: the computer flashes an invisible light at the network which reads it and flashes a response.

Of course, for this to work you need a standard. There is a standard for infra-red TV remote controls to make sure that changing channels doesn't stop the video or open the curtains. To this end Hewlett-Packard, which pioneered the Serial Infra Red standard, organised the Infra-Red Data Association (IrDA) which now has over 100 members including chip makers, computer manufacturers, and printer manufacturers. This initial specification was launched in March 1994 and has vastly spread in popularity. It works at short range, and being light-based is of course line of sight, with a speed of 115Kbps. Since infra-red LEDs are very cheap and the switching is simple, the cost of adding IrDA to a device is tiny and the power consumption low. Judging by the number of notebook manufacturers including it on their machines, it's a standard which has now taken off. IBM, Compaq, Toshiba and Gateway 2000, to name but a few, have at least one machine with an IrDA port in the range.

Just as the new standards start to become popular, a new standard which allows faster rates of transmission — 1.5Mbps and beyond — is being written for the IrDA specification. This is not quite as damning as it seems since the new specification allows backwards compatibility to run at the old speed. The first device to support the 1.15Mbps speed is the IBM ThinkPad. This can communicate with IrDA devices at 115Kb and with devices like the Apple Newton and Sharp IQ using older standards at 9600bps. Currently, a number of manufacturers provide machine-to-machine links by using the Tranxit (LapLink-like) software.

A disadvantage of the standard is that there is no security. IrDA relies upon the limited distance and line of sight transmission to stop unwanted snoopers from reading your beam. If you are concerned you can add software encryption. The invisible network is still a little way off, but infra-red printing is alive and well.

We are now seeing more and more infra-red devices. It's a flexible way of linking PCs, notebooks and peripherals and it doesn't add much cost to the equipment and requires little power or board space. It's ideal for pocket computers and works well in an environment where a number of users want to share a printer without installing a network. It's not a universal solution — it doesn't replace the network just yet — but for many people it will be a better bet than a docking station.

**Simon Rockman**

## Battery technology

Notebooks are sexy, wonderful things and can do anything a desktop PC can do. Except, that is, keep on running until the cows come home. As any notebook user knows, the time when your notebook's battery runs out of juice will invariably be one of three situations: just before you had time to save that mega-spreadsheet, just before you're about to make a crucial sales presentation, and just at the moment you realise you left the AC power supply at home.

Although strides have been made in battery technology, concurrent advances made in PC technology such as fast Pentium processors, hard disks measured in gigabytes and ever bigger screens has put greater strains on battery life. PC manufacturers and third party software vendors have helped with better battery management and sleep software but ultimately the real task lies with the battery itself. Unfortunately we are a long way off a super-light, super-life battery but advances are being made with today's battery technology.

Lithium-ion batteries are now being seriously looked at by both notebook *and* portable phone manufacturers. Environmentally friendly, they do not contain polluting material (such as Cadmium, Mercury, PVC). They are also lightweight with a high-energy density, said to be 1.8 times the current capacity of Nickel Cadmium (NiCad). But perhaps the best advantage of Lithium-ion is that they don't need to be fully discharged before they can be recharged. Stored Lithium-ion batteries also discharge less.

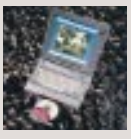
But currently the most popular types of battery to be found in notebooks are still Ni-Cad and Nickel-Metal Hydride (NiMH). NiCad is becoming cheap and its main advantage is voltage stability throughout multiple recharge/discharge operations. But they tend to be bigger and harm the environment if not disposed of properly.

NiMH batteries can hold up to 80 percent more charge than NiCads but take longer to charge and cost much more. And both types must be fully discharged before recharge otherwise their overall life is reduced.

For now it remains a question of swings and roundabouts: if you are going to use your notebook mostly on the road (and why not?) make sure you look at how good its own power management systems are as well as the weight, recharge time and life of its battery system. And save your spreadsheets more often.

**PJ Fisher**

## TABLE OF FEATURES PENTIUM 90MHZ NOTEBOOKS

| | ACI | Adams | Compaq | DFI | Elonex |
|---|---|---|---|---|---|
| **Manufacturer** | **ACI** | **Adams** | **Compaq** | **DFI** | **Elonex** |
| **Model Name** | **Amethyst** | **Accura Portable Plus** | **LTE 5100** | **Explorer** | **Elonex NB-590/I** |
| **Company Phone No.** | 0181 830 1958 | 0161 877 8822 | 0181 332 3000 | 0181 776 5555 | 0181 452 4444 |
| **Company Fax No.** | 0181 830 1959 | 0161 877 8684 | 0181 332 3145 | 0181 776 5500 | 0181 452 6422 |
| **Price of Machine Being Reviewed** | £2467 | £3198 | £5330 | £2695 | £2735 |
| **SPECIFICATION** | | | | | |
| **Processor Type and Speed** | Pentium 90MHz | Pentium 100MHz | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz |
| **RAM Supplied (Mb)** | 16 | 16 | 24 | 16 | 16 |
| **RAM Maximum (Mb)** | 32 | 32 | 72 | 64 | 40 |
| **Level 2 Cache (Kb)** | 256 | 256 | 256 | 256 | 256 |
| **Hard Disk Supplied** | 810Mb | 540Mb | 810Mb | 540Mb | 520Mb |
| **Floppy Disk (Int/Ext)** | Int | Int | Int | Int | Int |
| **PCMCIA Slots Type II/Type III** | 2 Type II or 1Type III | 2 Type I, 2 Type II or 1 Type III | 2 Type I, 2 Type II or 1 Type III | 2 Type II or 1Type III | 2 Type II or 1Type III |
| **Pointer Type** | Glide Pad | Trackpad | Easy Point II | Trackpad | Touchpad |
| **CD-ROM Manufacturer** | Teac | Teac | Varies | Toshiba | TEAC |
| **CD-ROM Speed** | Dual Speed | Quad speed | Dual speed | Dual speed | Double speed |
| **Other/Extra** | | | | | |
| **16-bit Sound Capability** | ● | ● | ● | ● | ● |
| **CONNECTORS** | | | | | |
| **Serial Port (Std/Enh)** | Enh | Enh | Std | Enh | Standard |
| **Parallel Port (Std/Enh)** | Enh | Enh | Enh | Enh | Enhanced |
| **Ext Conns Key/VGA/Mouse** | Keyboard, VGA, PS/2, Audio | PS/2, VGA, Audio | PS/2, VGA, Audio | PS/2, VGA, RCA, Audio | PS/2, VGA, Audio |
| **IRDA Option?** | ● | ❍ | ● | ● | ● |
| **DISPLAY** | | | | | |
| **Display Type** | DSTN | TFT | TFT | TFT | TFT |
| **Screen Size (inches)** | 11.3 | 11.8 | 10.4 | 10.4 | 10.4 |
| **On-screen Colours @ 640x480** | 64K | 64K | 64K | 64K | 64K |
| **External Mon Colours @ 1024x768** | 256 | 65, 000 | 65,000 | 256 | 256 |
| **POWER SUPPLY** | | | | | |
| **Battery Technology** | Ni MH | Ni MH | Ni MH | Li Ion | Ni MH |
| **Claimed Battery Life (Hours)** | 1 hour | 2 hours | 2.5 to 4 hours | 2 hours | 3.5 hours |
| **Claimed Recharge Time ( in use)** | 2 hours | 3 hours | 3 hours | 2 hours | 2 hours |
| **PHYSICAL SIZE** | | | | | |
| **Dimensions (WxDxH) cm** | 30 x 22.7 x 5.4 | 29.8 x 23.8 x 5.2 | 22.9 x 31x 5.1 | 29.5 x 22.5 x 5.8 | 29.7 x 22.8 x 5 |
| **Weight with Battery** | 3.5kg | 2.9 kg | 3.5kg | 3.3kg | 2.9kg |
| **SOFTWARE** | | | | | |
| **Operating System version** | Windows 95 | Windows 95 | Windows 95 | Windows 95 | Windows 95 |
| **Business Applications** | Top level Complete Works | None | None | None | kMS Office, Office Professional, Lotus SmartSuitek |
| **Multimedia Titles** | None | None | None | None | kMS Works, MS Money, MS Encarta, MS Scenes, Tuneland, Shareware gamesk |
| **Other** | Utilities | Utilities | Utilities | Utilities, drivers | Utilities |
| **SALES AND SUPPORT** | | | | | |
| **Basic Warranty Length (years)** | 1 year | 1 year | 3 years | 12 year | 1 year |
| **On-site Service or Back to Base (BTB) available** | BTB | BTB | BTB | BTB | BTB |
| **Extended Warranty available** | ● | ❍ | ❍ | ● | ❍ |
| **Sold through Dealers or Direct** | Direct | Direct | Dealers | Dealers | Direct |
| |  |  |  |  |  |

**KEY** ● Yes ❍ No
*IRDA (Infra-Red Data Association)

## TABLE OF FEATURES PENTIUM 90MHZ

| | NEC | Olivetti | Panasonic | Toshiba | Twinhead |
|---|---|---|---|---|---|
| **Manufacturer** | **NEC** | **Olivetti** | **Panasonic** | **Toshiba** | **Twinhead** |
| **Model Name** | **Versa 4050H** | **Echos P90** | **CF-4LQT44** | **Satellite Pro 410CDT** | **Twinhead SlimNote 8** |
| **Company Phone No.** | 0181 993 8111 | 0181 785 6666 | 0500 404041 | 01932 828828 | 01256 56066 |
| **Company Fax No.** | 0181 235 4930 | 0181 780 8191 | N/A | 01932 852455 | 01256 811142 |
| **Price of Machine Being Reviewed** | £4545 | £3499 | £4499 | £4490 | £3005 |
| **SPECIFICATION** | | | | | |
| **Processor Type and Speed** | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz |
| **RAM Supplied (Mb)** | 20 | 16 | 16 | 16 | 16 |
| **RAM Maximum (Mb)** | 40 | 40 | 48 | 40 | 64 |
| **Level 2 Cache (Kb)** | 256 | 256 | 256 | 256 | 256 |
| **Hard Disk Supplied** | 810Mb | 810 | 1Gb | 810Mb | 810Mb |
| **Floppy Disk (Int/Ext)** | Int | Int | Int | Int | Int |
| **PCMCIA Slots Type II/Type III** | 2 Type II or 1Type III | 2 Type II or 1Type III | 2 Type II or 1Type III | 2 Type II or 1Type III | 2 Type II or 1Type III |
| **Pointer Type** | Versa Glide | Trackpad | Trackball | Mouse Point (nipple) | Touchpad |
| **CD-ROM Manufacturer** | NEC | Teac | Panasonic | Toshiba | Toshiba |
| **CD-ROM Speed** | Dual speed | Dual speed | Dual speed | Quad speedspeed | Dual speed |
| **Other/Extra** | | | | | |
| **16 bit Sound Capability** | Yes | Yes | Yes | Yes | Yes |
| **CONNECTORS** | | | | | |
| **Serial Port (Std/Enh)** | Std | Std | Std | Std | Enh |
| **Parallel Port (Std/Enh)** | Std | Std | Std | Enh | Enh |
| **Ext Conns Key/VGA/Mouse** | PS/2, VGA, Audio | PS/2,VGA, Audio | PS/2, VGA, Audio | PS/2,VGA, Audio | PS/2, VGA, RCA, MIDI |
| **IRDA Option?** | Yes | Yes | No | Yes | Yes |
| **DISPLAY** | | | | | |
| **Display Type** | TFT | TFT | TFT | TFT | TFT |
| **Screen Size (inches)** | 10.4 | 10.4 | 10.4 | 11.3 | 10.4 |
| **On-screen Colours @ 640x480** | 64K | 64K | 64K | 64K | 64K |
| **External Mon Colours @ 1024x768** | 256 | 64k | 256 | 256 | 256 |
| **POWER SUPPLY** | | | | | |
| **Battery TechNology** | Li Ion | Ni MH | Ni MH | Li Ion | Li Ion |
| **Claimed Battery Life (Hours)** | 5 hours | 3 hours | 6 hours | 4 hours | 2.5 hours |
| **Claimed Recharge Time ( in use)** | 2.5 hours | 3 hours | 3.5 hours | 2.5 hours | 2 hours |
| **PHYSICAL SIZE** | | | | | |
| **Dimensions (WxDxH) cm** | 29.7 x 24.1 x 5.1 | 28.6 x 22.8 x 4.9 | 29 x 23.5 x 5.9 | 29.9 x 23.5 x 5.5 | 29.5 x 22.5 x 5.4 |
| **Weight with Battery** | 2.88kg | 2.9kg | 3.6kg | 3.4kg | 3.3kg |
| **SOFTWARE** | | | | | |
| **Operating System version** | Windows 3.11 or Windows 95 | Windows 95 | Windows 95 | Windows 95 | Windows 95 |
| **Business Applications** | MS Office | Windows for Workgroups 3.1 | None | Windows for Workgroups 3.1 | |
| **Multimedia Titles** | None | None | None | None | None |
| **Other** | Utilities | Utilities | Utilities | Utilities, Audio Utilities, Puma, Tranxit | Utilities |
| **SALES AND SUPPORT** | | | | | |
| **Basic Warranty Length (years)** | 3 years | 1 year | 3 years | 3 years | 1 year |
| **On-site Service or Back to Base (BTB) available** | BTB | n/a | BTB | BTB | Dealer dependent |
| **Extended Warranty available** | Yes | No | Dealer dependent | Dealer dependent | Dealer dependent |
| **Sold through Dealers or Direct** | Dealer | Dealers | Dealers | Dealers | Dealers |
| |  |  |  |  |  |

**KEY** ● Yes ○ No
*IRDA (Infra-Red Data Association)

## TABLE OF FEATURES PENTIUM 90MHZ NOTEBOOKS

| | Enact | Evesham | Fujitsu | Gateway | IBM |
|---|---|---|---|---|---|
| **Manufacturer** | **Enact** | **Evesham** | **Fujitsu** | **Gateway** | **IBM** |
| **Model Name** | **Enact 5400 series** | **Voyager II** | **Ergolite 590CD** | **Gateway Solo V90** | **ThinkPad 760CD** |
| **Company Phone No.** | 01952 428 8888 | 01386 765500 | 01344 472000 | 0800 973 120 | 0345 727272 |
| **Company Fax No.** | 01952 428 800 | 01386 765354 | 01344 473756 | 00 353 1 848 2022 | 0345 727 272 |
| **Price of Machine Being Reviewed** | £2599 | £2677 | £3295 | £2999 | £6270 |
| **SPECIFICATION** | | | | | |
| **Processor Type and Speed** | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz | Pentium 90MHz |
| **RAM Supplied (Mb)** | 16 | 16 | 16 | 16 | 24 |
| **RAM Maximum (Mb)** | 32 | 64 | 40 | 40 | 40 |
| **Level 2 Cache (Kb)** | 256 | 256 | 256 | 256 | 256 |
| **Hard Disk Supplied** | 540Mb | 528Mb | 520Mb | 720Mb | 1.2Gb |
| **Floppy Disk (Int/Ext)** | Int | Int | Int | Int | Int |
| **PCMCIA Slots Type II/Type III** | 2 Type II or 1Type III | 2 Type II or 1Type III | 2 Type II or 1Type III | 2 Type II | 2 Type I, 2 Type II or 1 Type III |
| **Pointer Type** | Glidepoint | Alps Glidepoint | Touch pad | EZ Pad | IBM Trackpoint III |
| **CD-ROM Manufacturer** | Teac | Panasonic | Teac | Matsushita | IBM |
| **CD-ROM Speed** | Dual speed | Quad speed | Dual speed | Dual speed | Quad speed |
| **Other/Extra** | built in game pad | | | | 28.8bps modem, MPEG2 |
| **16-bit Sound Capability** | Yes | Yes | Yes | Yes | Yes |
| **CONNECTORS** | | | | | |
| **Serial Port (Std/Enh)** | Enh | Enh | Enh | Enh | Std |
| **Parallel Port (Std/Enh)** | Enh | Enh | Enh | Enh | Enh |
| **Ext Conns Key/VGA/Mouse** | PS/2, VGA, Audio, MIDI | PS/2, VGA, Audio, RCA, MIDI | VGA, PS/2, Audio | PS/2,VGA, Audio | Ext FDD, VGA, Telephone, PS/2 |
| **IRDA Option?** | Yes | Yes | Yes | Yes | Yes |
| **DISPLAY** | | | | | |
| **Display Type** | TFT | TFT | TFT | TFT | TFT |
| **Screen Size (inches)** | 10.4 | 10.4 | 10.4 | 10.2 | 12.1 |
| **On-screen Colours @ 640x480** | 64K | 64K | 64K | 260K | 64k |
| **External Mon Colours @ 1024x768** | 256 | 256 | 256 | 256 | 256 |
| **POWER SUPPLY** | | | | | |
| **Battery TechNology** | Ni MH | Li Ion | Ni MH | Li Ion | Li Ion |
| **Claimed Battery Life (Hours)** | 30 minutes | 2-3 hours | 3.5 hours | 5 hours | 3.1 hours |
| **Claimed Recharge Time ( in use)** | 20 minutes | 2 hours | 2 hours | Not known yet | 2-3 hours |
| **PHYSICAL SIZE** | | | | | |
| **Dimensions (WxDxH) cm** | 30 x 22.7 x 5.4 | 29.5 x 22.5 x 5.8 | 29.7 x 22.8 x 5.0 | 30 x 22.4 x 5.1 | 29.7 x 21 x 5.43 |
| **Weight with Battery** | 3.5kg | 3.3kg | 3.15kg | 2.9kg | 3.4kg |
| **SOFTWARE** | | | | | |
| **Operating System version** | Dealer dependent | Windows 95 | Windows 95 | Windows 95 | Win 95, Win 3.11,OS/2 Warp |
| **Business Applications** | None | None | MS Works/Road Office | Office Professional 95 | World Beat and others |
| **Multimedia Titles** | None | None | Astound, Lost Eden | None | None |
| **Other** | Utilities | Drivers, Sound, MPEG | Utilities | Utilities | Utilities |
| **SALES AND SUPPORT** | | | | | |
| **Basic Warranty Length (years)** | 1 year | 1 year | 3 years | 1 year | 3 years |
| **On-site Service or Back to Base (BTB) available** | BTB | BTB | BTB | BTB | BTB |
| **Extended Warranty available** | No | Yes | No | No | Yes |
| **Sold through Dealers or Direct** | Dealers | Direct | Dealers | Direct | Dealers and Direct |
| |  |  |  |  |  |

**KEY** ● Yes ○ No
*IRDA (Infra-Red Data Association)

# Four Tops

**The latest breed of Pentiums promise to feed the hungriest of applications and bring you into the fast lane. Adele Dyer looks at four new machines from Dan, Elonex, Vale and Viglen boasting the Pentium P150 chip.**

The way Intel has been launching chips recently you'd think they were going out of fashion. First came the Pentium Pros and now the latest addition to the Pentium range, the P150 and the P166. For the average desktop, these are still the way forward. They are designed to make Windows 95 and those heavy office packages fairly race along.

We took a first glance at Viglen's P166 last month and have now got our hands on the first batch of P150s. Intel promises these chips are quickly going to become available in high volume, while by the summer, the P100 and P120 will be entry level processors. The new breed of P150s and P166s will then hold the high ground for some time to come. In other words, they are going to be highly desirable objects.

To give you an idea of how these new chips are expected to perform, Intel has produced the Intel Comparative Microprocessor performance index (iCOMP), based on 16 and 32-bit processor performance on integer, floating-point, graphics and video operations. The results show the P120 with a score of 1000, the P150 with 1176 and the P166 with 1308 (see the Intel Web pages on www.intel.com for more details). The P150 nestles nicely between the P120 and the P166 in terms of both performance and price.


## Dan Ultimate 150MHz

The most unusual feature of the Dan had to be the motherboard. From Asustek, it features both kinds of Level 2 cache sockets: the older type house individual

cache chips as well as a COAST (cache on a stick) socket with 256Kb cache.

The other components were more standard: a 1Gb Quantum Fireball hard drive; 16Mb EDO RAM; Triton chipset and Socket 7. The multimedia aspects were taken care of by a Creative Labs AWE 32 sound card and a TEAC six-speed CD-ROM, while the video card was a Matrox Millenium.

Included in the deal is a V.34 internal modem, a useful addition to those who want to get online although you may prefer to choose your own modem. The machine came loaded with software to g with the fax/modem, including Pipex Dia and an icon to take you to the Dan BBS. This is all fully set up and ready to run and you can find further help through the pre-loaded Dan Information module.

The 17in monitor is capable of 1600 x 1200 x 256 at 60Hz and runs non-interlaced at this speed. While the monitor itself was easy to use, the on-screen controls were a little annoying. Whether or not you like on-screen controls is a matter of taste, but these were worse than most of their type. The screen resolution dialogue box came on repeatedly — at first, whenever we shut down, booted up or opened a DOS box. We could stop it from coming up when opening a DOS box, but it was mildly annoying to have it flash up every time we rebooted.

Performance-wise, the Dan was level pegging with the other machines, both o the benchmarks and on the Doom 2 tests. The only problem was running the WordPerfect 6.0 for DOS tests as it did not have enough extended memory to cope, although this problem was easily corrected. Altogether, the machine ran very well, as did all the PCs in this test. The Dan, however, has the edge on the added extras, the fax/modem and software bundle.

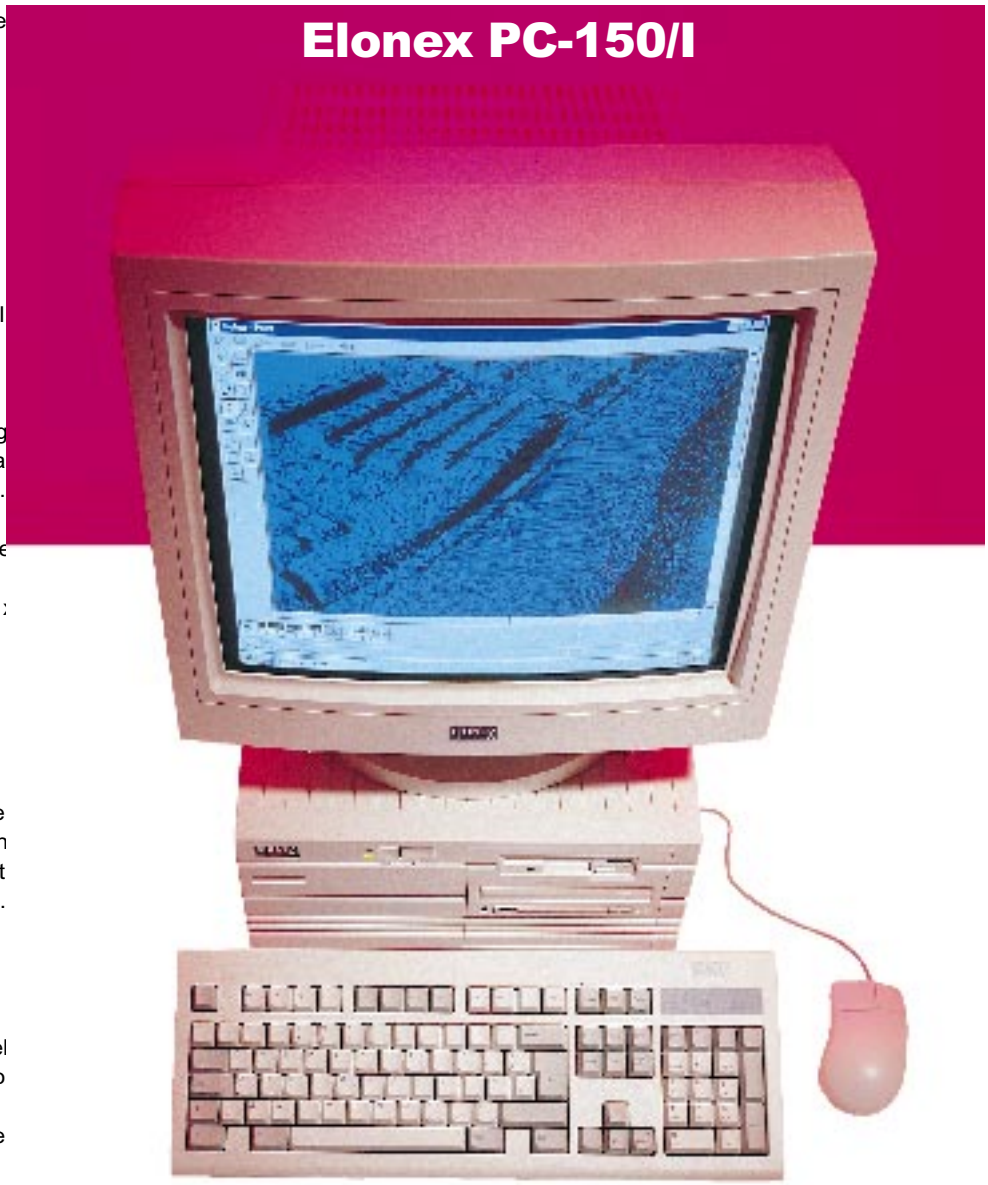
## PCW Contacts

### Dan Ultimate 150MHz

**Price** £2600
**Contact** Dan
**Tel** 0181 830 1100
**Fax** 0181 830 1122
**Hardware Bundle** AT75 — 160W
**Software Bundle** Windows 95, Works 4.0
**Warranty** Lifetime back to base

**Good Points** Good monitor and software bundle. Fax/modem included.
**Bad Points** Outdated motherboard. Annoying on-screen monitor controls.
**Conclusion** A good machine, but a little pricey.

# Elonex PC-150/I



### Elonex PC-150/I

Elonex is a genuine OEM (original equipment manufacturer), making its own boards rather than just buying in Intel boards and putting all the bits together. The fact that Elonex had control over the internal designs meant that this was one of the most original and interesting machines we have looked at for a while.

The main motherboard is half-size and has on it the IDE connections for the hard disk and CD-ROM drive. There is one PCI slot here and it contains a riser card with three PCI and three ISA expansion slots, as well as a PCI SCSI connection.

There are two reasons for this arrangement. Firstly, by effectively bending the board in two you can fit the maximum expansion in a very small case, so leaving you more desk space. Secondly, you can upgrade easily and cheaply. Elonex does a range of riser cards which can meet a variety of needs. The idea is that you can buy a P75 with a more basic riser card and upgrade it right up to a P166 with onboard SCSI, by changing the chip, clocking up the motherboard and adding a new riser card. For only £50 for a riser card with SCSI you will save yourself money on a SCSI card for internal devices such as a hard disk or a tape streamer.

The design has a couple of drawbacks — everything is very squashed. The hard disk sits slap on top of the power supply, a potentially problematic position, while putting anything into the spare front-facing bay under the floppy and CD would mean considerable fiddling.

The performance of the Elonex was not really reflected in the benchmark tests. The Doom 2 test gave a score comparable with the other machines and

in use it suggested a faster speed than the results of the tests proved.

Otherwise, the PC150/I is well-specced. The CD-ROM drive is from Sony and, while not a six-speed like the others in this test, is nevertheless a good drive. The monitor is neat, capable of 1600 x 1200 x 256 at 60Hz. The screen controls are operated through a few simple switches on the monitor and on-screen software.

## PCW Contacts

### Elonex PC150/I

**Price** £2390
**Contact** Elonex
**Tel** 0181 452 4444
**Fax** 0181 452 6422
**Software Bundle** Windows 95, MS Works, Encarta 96, Money, Scenes, 7th Level, Tuneland
**Hardware Bundle** Altec Lansing ACS 31 with Subwoofer
**Warranty** One year on-site

**Good Points** Small but with plenty of room for expansion.
**Bad Points** The slowest in the test.
**Conclusion** A decent machine at a reasonable price.

## Vale Platinum SE P150


### Vale Platinum SE P150

The Vale stood out because of its speed. It outperformed the rest of the machines in the test by only a whisker, but every little bit counts. The benchmark tests gave the Vale an edge on the rest of the crowd, but so too did the Doom 2 scores. After our recent P120 group test (*PCW* January) we found that a high score in one test did not automatically predict a high score in the other. In the group test of P120s the Vale machine was the highest Doom 2 scorer but showed only average performance in the benchtests. In this test the P150 was consistent in its high performance, winning both tests.

In other respects, the machine was strikingly similar to the Viglen. Both machines use the Intel Endeavour board, which has been updated by Intel to clock the chip at 2.5 times the speed of the board. The I/O therefore runs at 60MHz and the Triton chipset at 30MHz, but the board can be clocked up to make the I/O run at 66MHz for the P166.

Some of the other components stood out from the crowd. The 2Gb Seagate Medallist Fast ATA-2 hard drive was the first of its kind both in size and type that we have seen in a review machine. The TEAC six-speed CD-ROM drive won our recent six-speed round-up (January 96 issue), while the Matrox Millenium video card has 2Mb WRAM, which is faster than VRAM. The Vale also came fitted with 512Kb of cache. There was no sound card, as the Endeavour board comes complete with a built-in Vibra 16S chip.

We had a problem with the first monitor we saw but Evesham promptly sent us a new one and this worked well apart from one small fault: we could not get it to run in 256 colours. Oddly, it only ran in the 16-bit high colour. However, the monitor does have certain factors in its favour. It was 17in, capable of 1024 x 768 at 72Hz non-interlaced and has on-screen commands.

The high spec and resultant speed of this machine made it a clear winner, offering the best value for money of the bunch.

## PCW Contacts

### Vale Platinum SE P150

**Price** £2229
**Contact** Evesham Micros
**Tel** 01386 765500
**Fax** 01386 765354
**Warranty** One year on-site
**Hardware Bundle** Zy-Fi speakers
**Software Bundle** Windows 95

**Good Points** Very high spec machine.
**Bad Points** Initial problem with the monitor.
**Conclusion** A nice little runner. A well deserved Editor's Choice.

# Viglen Genie PCI P5/150

## PCW Contacts

**Viglen PCI P5/150**

**Price** £2107
**Contact** Viglen
**Tel** 0181 758 7000
**Fax** 0181 758 7080
**Warranty** Two years back to base
**Hardware Bundle** QuickShot Sound Force 1 speakers
**Software Bundle** Windows 95, Works 95, Encarta, Music, Golf, MS Money

**Good Points** Fast, well specced, well built.
**Bad Points** Fiddly RAM SIMMs.
**Conclusion** Excellent value.

## Viglen Genie PCI P5/150

Having reviewed the Viglen P166 in last month's First Impressions, we were keen to see how a P150 from the same manufacturer would perform in our benchmark and Doom 2 tests. The results were reassuringly fast — faster, in fact, than you could reasonably expect. The Viglen P166 clocked up a score of 2.5 in the benchmarks, while the P150 rated 2.35. However, the Doom 2 score was much slower on the P150 than on the P166, the P166 producing 64fps and the P150 only 54.

As to the build of the machine, it came as no great surprise to find the P150 squidged from the same mould. Both use the updated Intel Endeavour motherboard but with the I/O running at only 60MHz, and the Triton chipset at 30MHz on the P150, not 66MHz and 33MHz respectively as with the P166. This new board includes onboard sound in the form of a Creative Labs Vibra 16S chip, with the I/O connections on a riser card.

The similarities do not end there, as the two machines have exactly the same components throughout. These include a 1Gb Quantum Fireball and a TEAC six-speed CD-ROM drive, which won our recent round-up of six-speed drives. The graphics card is a Matrox Millenium.

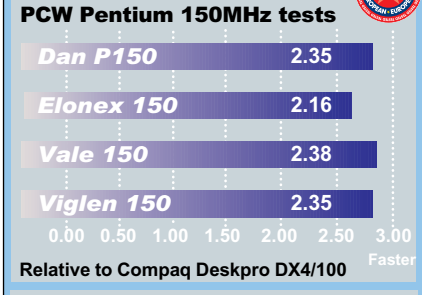
The case allows plenty of room for expansion. The mini-tower allows for two free 5.25in bays and one 3.5in front-facing bay, as well as one more internal 3.5in bay. The hard disk hangs over two of the four SIMMs sockets however, so removing the two existing 8Mb EDO SIMMs would be a little fiddly.

The Viglen Envy 17PE monitor is standard fare but has a fairly dense black screen and a slim, elegant surround. It can operate up to 1600 x 1200 x 256 at 85Hz and its maximum non-interlaced refresh rate is 75Hz.

Comparisons between the P150 and the P166 are probably most easily made by taking the Viglen machines we have reviewed as benchmarks. On the Windows applications tests, the P150 seemed to do proportionally better than the P166, but on the Doom 2 test, the P166 stormed ahead. For the price against the P166, the P150 is highly competitive for general use.

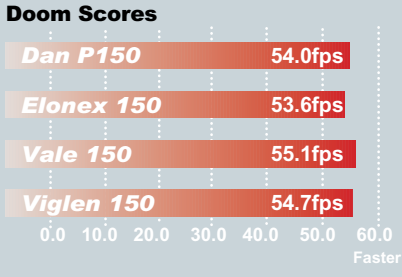
### Benchtest Results

**PCW Pentium 150MHz tests**




**Relative to Compaq Deskpro DX4/100**

**Doom Scores**




*For details on our tests, see page 122.*

## Editor's Choice

To judge these machines against one another on speed alone would be a hard job. All four were very close in terms of performance figures in the benchmark tests and even closer in the Doom 2 tests. They were equally close on build quality. All were sensibly put together and well configured, so again there was nothing to put between them.

The only two criteria left to judge them by, therefore, by price and components. The Dan was the most expensive but managed to include a modem. Going by price the Viglen is the winner, at a staggeringly cheap £2107. However, the Editor's choice went to Vale, firstly for including a 2Gb hard drive, and secondly for being marginally the fastest.

## To Pro or not to Pro

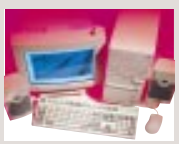
Intel has produced a glut of new chips over the past few months, so how are you to choose between them? If you can buy both a Pentium P150 and a Pentium Pro 150, should you spend nearly £1500 more on a Pentium Pro, or should you stick to a tried Pentium clocked up to 150 MHz?

The simple answer is the two are designed for different purposes. Pentium Pros have been optimised for 32-bit code, and a Pentium Pro 150 runs 16-bit code slower than a Pentium 150. So there is little benefit in running Windows 95 on a Pentium Pro, or much of your everyday software.

The Pentium Pro range is first and foremost a workstation chip. If you plan to run 32-bit operating systems such as Windows NT or Unix, and heavy-duty applications whether software development tools, CAD packages or network software for a large proportion of your daily business, then the Pentium Pro is a sensible choice. It is well priced for a workstation or a server, starting at around £3750, but would be overpriced for a general home machine.

In contrast, the Pentium range is designed to process all the everyday 16-bit applications which the majority of non-specialist users are most likely to run. Windows 95 still contains some 16-bit code and while many of the office suites are now being produced in 32-bit versions, it will be a while before all software is written as 32-bit code. Of course a Pentium can run 32-bit code, but it has not been optimised for it like the Pentium Pro. A Pentium is therefore seen as the business and home computing chip, while the Pentium Pro is the workstation and server chip. If you are looking for a home machine, the Pentium is the only answer.

## TABLE OF FEATURES PENTIUM 150MHZ

| | Dan | Elonex | Evesham Micros | Viglen |
|---|---|---|---|---|
| **Manufacturer** | **Dan** | **Elonex** | **Evesham Micros** | **Viglen** |
| **Model Name** | **Dan Ultimate 150MHz** | **PC-150/I** | **Vale Platinum SE P150** | **Genie PCI P5/150** |
| **Tel No** | 0181 830 1100 | 0181 452 4444 | 01386 765500 | 0181 758 7000 |
| **Fax No** | 0181 830 1122 | 0181 452 6422 | 01386 765354 | 0181 758 7080 |
| **Price (excl VAT)** | £2600 | £2390 | £2229 | £2107 |
| **Local Bus Architecture** | PCI | PCI | PCI | PCI |
| **Free local bus only slots** | 4 | 1 | 3 | 2 |
| **Free ISA only slots** | 1 | 1 | 2 | 2 |
| **Free shared local Bus/ISA slots** | 0 | 1 | 1 | 1 |
| **Motherboard Manufacturer** | Asustek | Elonex Technologies | Intel | Intel |
| **Chipset** | Triton | Triton | Triton | Triton |
| **No. of spare 3.5in bays** | 1 | 1 | 2 | 1 |
| **No. of spare 5.25in bays** | 2 | 1 | 2 | 2 |
| **Hard Disk Manufacturer** | Quantum | Seagate | Seagate | Fujitsu |
| **Hard Disk Size** | 1Gb | 1Mb | 2Mb | 1Gb |
| **Hard Disk Interface** | EIDE | EIDE | Fast ATA-2 | EIDE |
| **RAM** | 16Mb EDO | 16Mb EDO | 16Mb EDO | 16Mb fast page |
| **Secondary cache (Kb)** | 256Kb pipeline burst | 256Kb pipeline burst | 512Kb pipeline burst | 256Kb pipeline burst |
| **CD-ROM Drive** | TEAC 56E | TEAC 56E | TEAC 56E | TEAC 56E |
| **CD-ROM Speed** | 6X | 6X | 6X | 6X |
| **Sound Card** | Creative Labs SoundBlaster AWE 32 Value | Creative Labs SoundBlaster AWE 32 | Creative Labs Vibra 16S on motherboard | Creative Labs Vibra 16S on motherboard |
| **Graphics Card** | Matrox Millenium | Matrox Millenium | Matrox Millenium | Matrox Millenium |
| **Graphics Card RAM/Max RAM** | 2Mb | 2Mb | 2Mb | 2Mb |
| **Graphics Card max non-interlaced resolution** | 1600x1200x256 @ 60Hz | 1600x1200x256 @ 60Hz | 1600x1200x256 @ 60Hz | 1600x1200x256 @ 85Hz |
| **Monitor** | Liyama 9017E | Acer 7176I | Smile 1716SL | Viglen 17PE |
| **Monitor Size** | 17in | 17in | 17in | 17in |
| **Monitor Maximum Refresh Rate at 1024x768 (Hz)** | 85Hz | 75Hz | 72Hz | 75Hz |
| |  |  |  |  |

**KEY** ● Yes ○ No

# PCW AWARDS 1996

PCW AWARDS 1996

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This machine is the "ultimate" prize. There's 16Mb of RAM, 1Gb hard disk and a graphics card with 2Mb of VRAM, plus full multimedia in the form of a quad speed CD-ROM drive and a SoundBlaster AWE 32 Value sound card. You also get a high-res 17in monitor.

For software, there's a choice of Windows 95 or Windows 3.11 plus Microsoft Encarta, Works for Windows, Money for Windows, and Scenes.

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PCW AWARDS 1996

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| | |
|---|---|
| 1 Best Software vendor (or Dealer) | |
| 2 Best Hardware vendor (or Dealer) | |
| 3 Best Telephone Support **Hardware** | |
| 4 Best Telephone Support **Software** | |
| 5 Best After Sales Service | |
| 6 Most Reliable PC | |
| 7 Best Advertisement | |

## Best Hardware Awards

| | |
|---|---|
| 8 Most Innovative Hardware | |
| 9 Best PC System | |
| 10 Best PC for the Home | |
| 11 Best Notebook | |
| 12 Best Printer | |
| 13 Best Budget Printer | |
| 14 Best Sound Card | |
| 15 Best CD-ROM Drive | |
| 16 Best Modem | |
| 17 Best Graphics Card | |
| 18 Best Gadget | |

## Best Software Awards

| | |
|---|---|
| 19 Most Innovative Software | |
| 20 Best Business Software application | |
| 21 Best Creative Software | |
| 22 Best Suite | |
| 23 Best Utility | |
| 24 Best CD-ROM | |
| 25 Best Game | |

## Comms/Online Awards

| | |
|---|---|
| 26 Best On-line Service/Service Provider | |
| 27 Best of British - Best UK Web-site | |
| 28 Best Web-site by a Small Company (less than 50 employees) or an Individual | |

The closing date for nominations is Thursday 29 February 1996

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**Company** .....

**Address** .....

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# Suite & savoury

**There are just two contenders in the software suite market — MS Office and Lotus SmartSuite. Ben Tisdall supervises the clash of the office titans, looking at their attention to detail and the integration between components.**


Just a few years ago, you bought word processors, spreadsheets and databases from different manufacturers. In the days of DOS, it wasn't unusual to buy WordPerfect as a word processor, Lotus 1-2-3 for spreadsheeting and dBase for your database work. Three entirely separate products, each with different interfaces and file formats. Then Microsoft hit on the bright idea of marketing its products together.

Initially the "suites", as they became known, were merely collections of disparate products, packaged in the same box. Gradually, once again led by Microsoft, the manufacturers began to work on integrating their products more thoroughly into a coherent package.

The integration has happened on several fronts. Structure, menus, look and feel are more similar across products. Code used for utilities such as spellcheckers is shared between the various componensts; and moving data across components is easier.

The components of the latest suites look and feel the same — so much so that it's sometimes easy to forget you're using Excel rather than, say, Word. But integration between the components is still at a pretty crude level.

The easiest way to transfer information from one application to another is still to cut and paste. Yes, you *can* embed an OLE object from Excel into a Word document, but even using the fast PC that we tested these applications on, (16Mb memory, 120MHz Pentium) it's a slow and rather unwieldy process, and one, I suspect, that very few people use.

### The great and the good

When we last looked at software suites, in June 94, there were four contenders. Since then, two of them — CA-Simply Business from Computer Associates and WordPerfect Office — have fallen out of the picture. Both products were effectively killed off by Microsoft.

Developing and maintaining a software suite is a hugely expensive process. As Microsoft has between 80 and 90 percent of the market, and Lotus accounts for most of the rest, it just hasn't proved economically viable for Computer Associates or Novell (the buyers of WordPerfect) to continue development.

That leaves just two contenders: Microsoft Office and Lotus SmartSuite. At the launch of Windows 95 in August, Microsoft launched Office 95. A few months later, SmartSuite appeared on the scene. Here we pitch the two products head to head.

They both have enough spellcheckers, table editors and templates to sink a small battleship. What we'll concentrate on in this review is not the many features, which you can take for granted, but the attention to detail and integration between components. These are ultimately what separate the great from the good.

## Lotus SmartSuite

Lotus became successful by producing the first killer application for the PC. Lotus 1-2-3 wasn't the first spreadsheet, but it was the fastest and the best.

Over the years, Lotus added to 1-2-3, mainly by acquisition. Its word processor, AmiPro, was bought in from Samna, developed and then renamed WordPro, as was Organizer (from a small British company, Threadz) and Approach, its database package.

A full install of SmartSuite gobbles 150Mb of disk space. Even a minimum install 74Mb. The default installation also installs the SmartCenter cabinet.

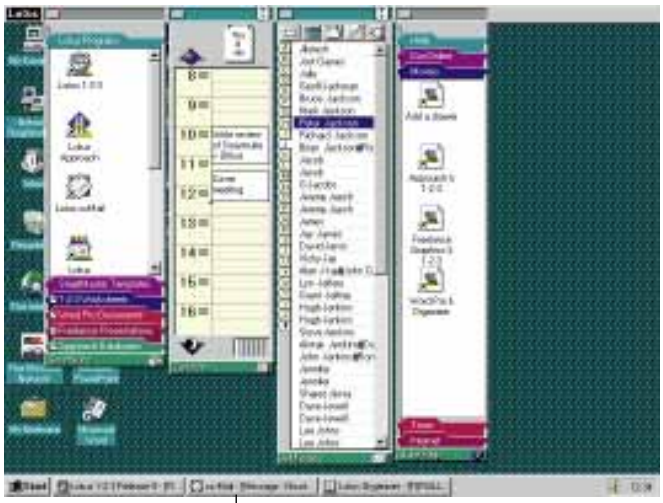


**Fig 1** *The folder drawer, calendar drawer, address drawer and suite answers drawer all drop down from above, producing some interesting sound effects as they do so. The address and calendar sections use your existing organiser file*

This is Lotus's big push towards integration. It consists of a Windows 95-style bar which can be anchored to the top or bottom of the screen. By default it has four main components (*Fig 1*) but can be fully customised.

The address list gives you access to

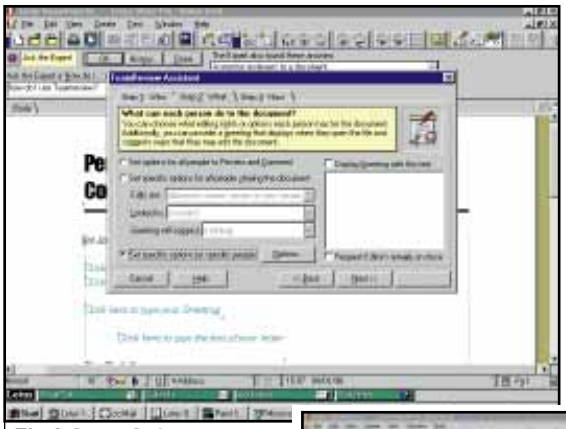


**Fig 2** *SmartSuite concentrates heavily on letting people work collaboratively on documents*

all the numbers and addresses in a Lotus organiser database and is a quick and easy way of looking up numbers. A name and address file can be shared between members of a team. SmartSuite has also added SuiteStart; a bar containing quick launch icons for the various applications which is added to the Windows 95 start bar. Lotus has majored on team working. It conducted research into how people work and discovered that 63 percent of documents require input or feedback from others and 46 percent of the time spent preparing business information is devoted to collecting input and feedback.

TeamMail, for instance, is designed to let you send email from within any component. Unfortunately, there are a number of inconsistencies between the various components. The interface within WordPro, even when working with Lotus's own ccMail email package, is slightly different from the one within Lotus 1-2-3.

TeamReview, now built into Word Pro and Freelance, but not yet into 1-2-3, lets you set up the who, what and how of sharing documents or presentations. Once the documents have been created, TeamConsolidate is there to bring thm together. Again, it's not yet in the spreadsheet.

Lotus says it has improved the consistency of menus between different SmartSuite components. But as you can see from our screenshots (*Figs 2 & 3*) they have some way to go to match Microsoft's level of integration.

Generally speaking, simple customisation of Lotus applications is less straightforward than with the Microsoft equivalents. It means going to user setup under the file menu. You can then drag buttons to the bar displayed in the dialogue box. In the Microsoft apps you simply right click on the tool bar at the top of the screen and then drag buttons from the dialogue box straight to the tool bar at the top of the screen — a more intuitive and quicker process.

For advanced customisation, Lotus has introduced LotusScript, a common BASIC programming language, across all components. The SmartSuite 96 feature set is available as common objects which can be used and reused to build custom applications.

A LotusScript Editor ships with the product. It proofs and formats code for correct syntax to make programming with it an easier task. A step by step view of programming execution helps with debugging.

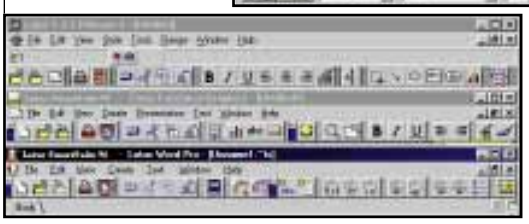


**Fig 3** *Comparing the menus and toolbars of the suites is a good guide to consistency*

But it's with the help utility that Lotus has made serious progress. Word Pro has introduced a feature called "Ask the Expert". Microsoft's has an equivalent, the Answer Wizard, but it has to be pulled up on-screen in a dialogue box. Ask the Expert stays on screen roughly where you normally find the Microsoft Tip Wizard. Where the Tip Wizard churns out tips at random, you can "Ask The Expert" anything you like just by entering words in English, followed by a question mark. I found it quick and easy to use but so far it's only in WordPro.

## The components in brief

● **Lotus 1-2-3**

The full 32-bit version of 1-2-3 is still under construction so version 5, which ships with SmartSuite 95, is a step or two behind the other apps and lacks new features such as "Ask The Expert".

It comes with a huge range of templates called Smartmasters, covering everything from creating a territorial sales plan to managing your personal budget. Sadly, none of these have been customised for the UK although you can, of course, create your own.

Otherwise, 1-2-3 has all the items that power spreadsheet users have come to expect: a plethora of formulas, tabbed worksheets, in-cell editing and a feature to copy one range's style to another. This

### Four piece suite

Experts can skip over this, but for PC novices it's worth running through the core software components:

● Word processor — Where you write letters and reports or even produce a simple newsletter. Word and Word Pro both have advanced features like outliners, table editors and facilities for adding up columns of figures.

● Spreadsheet — An electronic version of an old-fashioned ledger. Ideally suited for balance sheets, sales figures and the like but useful for lists as well. They now include excellent graphing and charting facilities.

● Presentation graphics — Traditionally used for producing overhead transparencies of bullet points and pie charts. Increasingly, the trend is towards doing presentations on a PC and the latest packages tackle this by including sound, sophisticated transitions between slides and support for video clips.

● Database — At its simplest, an electronic card index. For just a few hundred names and addresses an electronic Filofax, such as Lotus's Organizer, may be more appropriate. But for more sophisticated applications such as tracking products and customers the power of a relational database is required. Databases are generally the least user-friendly of the main suite applications. In most office environments you're more likely to use a database application that somebody else has written for you.

**Making your mind app...**

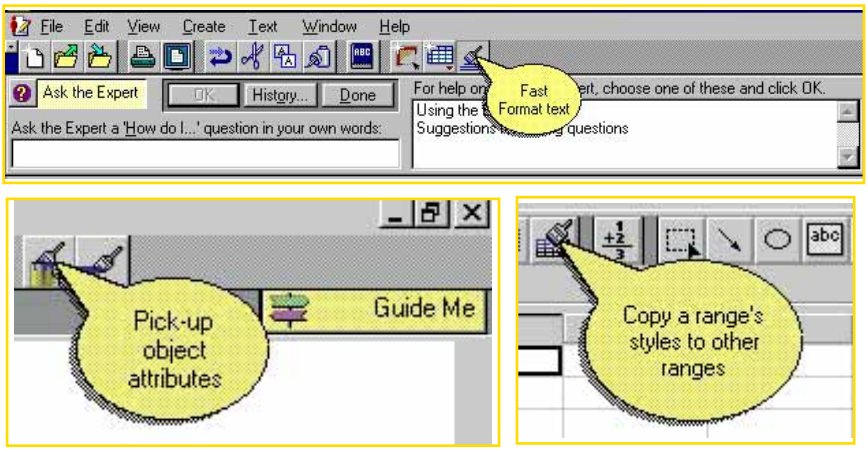



**Fig 4** *There's nothing like consistency and the Smartsuite applications are nothing like consistent. What is known as Format Painter in all the Microsoft applications rejoices in three different icons and two different names in SmartSuite*

idea was first dreamt up by the Microsoft PowerPoint development team, and is now found almost everywhere.

● **Word Pro**

Again, fairly bristling with all the features people have now come to expect from a modern major word processor. WordPro includes all the standard formatting features and then some. One of its main innovations is the ability to cycle through options for typeface, font size, alignment, bullets and numbering.

WordPro has a decent spellchecker, but lacks the Intellisense feature about which Microsoft makes such a song and dance. Rather begrudgingly I have to admit to liking the on-the-fly spell-checking of Word 7. It picks up typos and spelling mistakes and means I no longer need to bother running the spellchecker.

File filters used to be awful, but Microsoft now makes the Word file format freely available and the Word import filter in Word Pro is now flawless.

● **Freelance**

Freelance is a highly capable presentation graphics program. Back in September 94, we reviewed 16 of the DOS and Windows presentation packages then available and Freelance came out top. Eighteen months down the line, it still deserves top spot.

Research shows that most people use presentation graphics programs less often than word processors and spreadsheets so Lotus has set out to automate, as much as possible, the process of putting together a presentation. In Freelance, this means


**Fig 5** *Under the suite help section there are Screencam movies which show you how to use the various components*

over 30 SmartMaster templates which can be given any one of 25 different looks and colour schemes, plus plenty of clip-art. However, as with all the SmartSuite applications, there are some inconsistencies between the icons. For example, the fast format icon (format painter in MS-speak) is completely different in Freelance from the one in WordPro (*Fig 4*).

● **Approach**

A genuinely easy-to-use database. But programmability is limited and there's insufficient guidance on design principles. Not suitable for large or complex projects. For a full review see *PCW*, November 95.

● **Organizer**

Organizer, used in the *PCW* office, has matured into an excellent address and contacts book. It's far less buggy than it used to be, but still remains more prone to odd problems and glitches than it ought to be.

● **ScreenCam** (*Fig 5*)

ScreenCam is a simple, easy-to-use utility for creating and distributing screen movies. Demo movies supplied with SmartSuite are in ScreenCam format.

### Conclusion

Lotus is trying hard with SmartSuite, and the Win 95 version is a big improvement. Sadly, what it's done won't be enough to tempt Microsoft Office users. The product is just too different from the Office products, which means a period of low productivity and frustration for anyone planning to move over. It's also a strong disincentive to mix and match best of breed applications. Frankly, Lotus's strategy is all wrong. It's reminiscent of the days when every car had its indicators and switch gear in a different place and french ones had peculiar gear sticks which took a bit of getting used to.

Lotus needs to accept that the way Microsoft applications look is the standard for now. Then it can concentrate on making most of SmartSuite as much like Office as possible. It can differentiate the product by doing great templates, neat things with team computing and by integrating with Notes better than Microsoft could ever hope to.

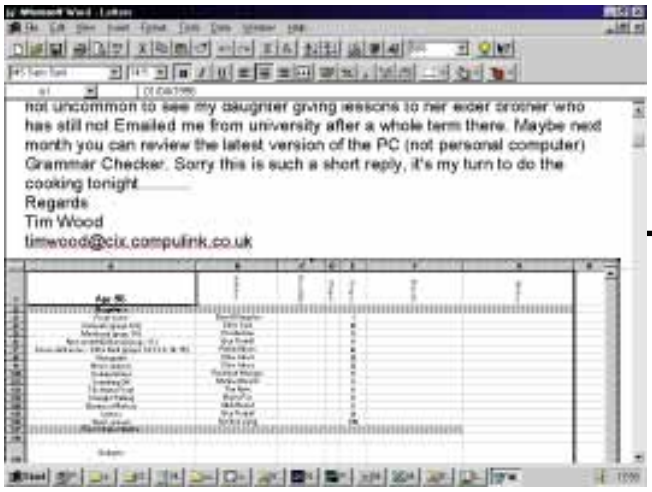
In the meantime, Lotus needs to work much harder on consistency. SmartSuite suffers from tool-bar button proliferation as it is. The least Lotus can do is to make sure that each component product uses the same buttons for the same functions.

# MS Office

Microsoft's path to domination of the business software market began with Windows. While it's rivals stuck with DOS, or developed for OS/2 (the operating system then widely expected to replace DOS), Microsoft produced first Excel (which was never available as a DOS program) and then Word for Windows. It later bought in Powerpoint and, after a long delay, added Access to complete its suite.

A full install of Microsoft Office Standard (which excludes MS Access) takes 89Mb, but a compact install squeezes into 28Mb. One irritation worth singling out is that once you've installed the product from the CD, you must make any changes to your installation from the same CD-drive on the same path — annoying if you're on a network.

The default install includes the Office Binder. This allows you to create a single file containing a mixture of different types of document, such as worksheets,




*You can embed an Excel object in a Word document but even on a 16Mb Pentium it's a slow and unwieldy process*

documents and presentations. Although we use MS Office at *PCW,* the binder has not caught on — no-one is currently using it, and most people couldn't remember what it was.

Where Lotus puts the emphasis on team working, Microsoft concentrates on what it calls "intellisense". Microsoft research discovered that 94 percent of users use spellcheckers, so its response was to include technology to spell check as you type. If you type something that Word doesn't recognise, it places a red wiggly line underneath it. You can correct it yourself, right click the word to spell check it, or add it to the dictionary.

In Word there is now some auto-formatting. For example, if you type an asterisk followed by a word and some text, the program will automatically insert a bullet point. Type "1 forward slash 2" and Word will automatically convert it into a $^1/_2$.

Under Office 7 you can share files. Under Excel you go to File Shared Lists and enable multi-user editing. On *PCW* we quickly tired of its strange anomalies. For example, you cannot re-format the text in a shared file, range it left, or even centre it.

## The components in brief

● **Excel 7**

Excel revolutionised spreadsheeting when it first appeared. Hitherto, spreadsheets had concentrated on adding more and more functions. Excel made spreadsheets look better with DTP-style formatting and font control.

Many features have been added since and most, such as Autosum, edit in place and tabs to switch between worksheets are now standard in all the main spreadsheets packages.

The latest release, Excel 7, adds a few innovations of its own. The scratch calculator will tot up any highlighted area of cells. It was added in response to the number of spreadsheet users who still keep a calculator to hand. Another detail in the same vein is a box which pops up when you scroll through large spreadsheets, telling you which row or column number you've reached. This was produced in response to the number of people who complained that they were getting lost in large worksheets.

● **Word**

Word has become almost the industry standard for word-processing. It tends to be Word for Windows skills that are required in secretarial temps.

The stand-out features of Word 7 are the intellisense features already described, now far more refined than in Word 6. For example, the previous version had the annoying habit of capping down acronyms — if you typed in "PC", Word 6 would turn it into "Pc". This has now been fixed. Microsoft has also sorted out the file dialogue box in this release and added an improved Internet Assistant. Templates have had a face lift too. Printing under Word now has its own thread, which means your system is tied up for a minimal amount of time.

● **PowerPoint**

Like Freelance, Powerpoint is a highly-automated graphics program. The Wizard now present in most Microsoft software reaches new heights in Powerpoint. The auto content Wizard doesn't quite cook your breakfast and pour the coffee, but it does check that the language you've used in a presentation is suitable for your audience. There's also a feature to scan your text for key words and suggest suitable clip-art.

● **Access**

The latest version is now much easier for beginners, but also has more to offer power users. It is slow and resource hungry though, and is the only application reviewed here that won't even run in 8Mb of memory. For a full review see *PCW* February.

● **Schedule Plus**

This utility, formerly part of the ill-fated Windows for Workgroups, has most of the features of Lotus Organizer, including a contact manager but with none of the appeal. It is faster though.

## Conclusion

For better or worse, Microsoft now dominates the suite market. Office 95 does enough to hang on to its lead. Its biggest fault is its greed for processor power and, above all, memory. Don't even think about using this product in less than 16Mb of memory, and a DX2/66MHz processor is the bare minimum. But if you have the horsepower you'll probably like Microsoft Office. Annoying rough edges are getting rarer and the consistency between applications leaves Lotus SmartSuite standing.

## Office vs SmartSuite

**Head to head ratings**

**App by app**

| | | | |
|---|---|---|---|
| Excel | ●●●● | 1-2-3 | ●●●● |
| Word | ●●●● | WordPro | ●●●○ |
| Powerpoint | ●●●○ | Freelance | ●●●● |
| Access | ●●●● | Approach | ●●○○ |
| Schedule Plus | ●●○○ | Organizer | ●●●● |

**Integration**

| | | | |
|---|---|---|---|
| MS Office | ●●●● | SmartSuite | ●●○○ |

**Overall**

| | | | |
|---|---|---|---|
| MS Office | ●●●● | SmartSuite | ●●●○ |

## PCW Details

**System requirements**

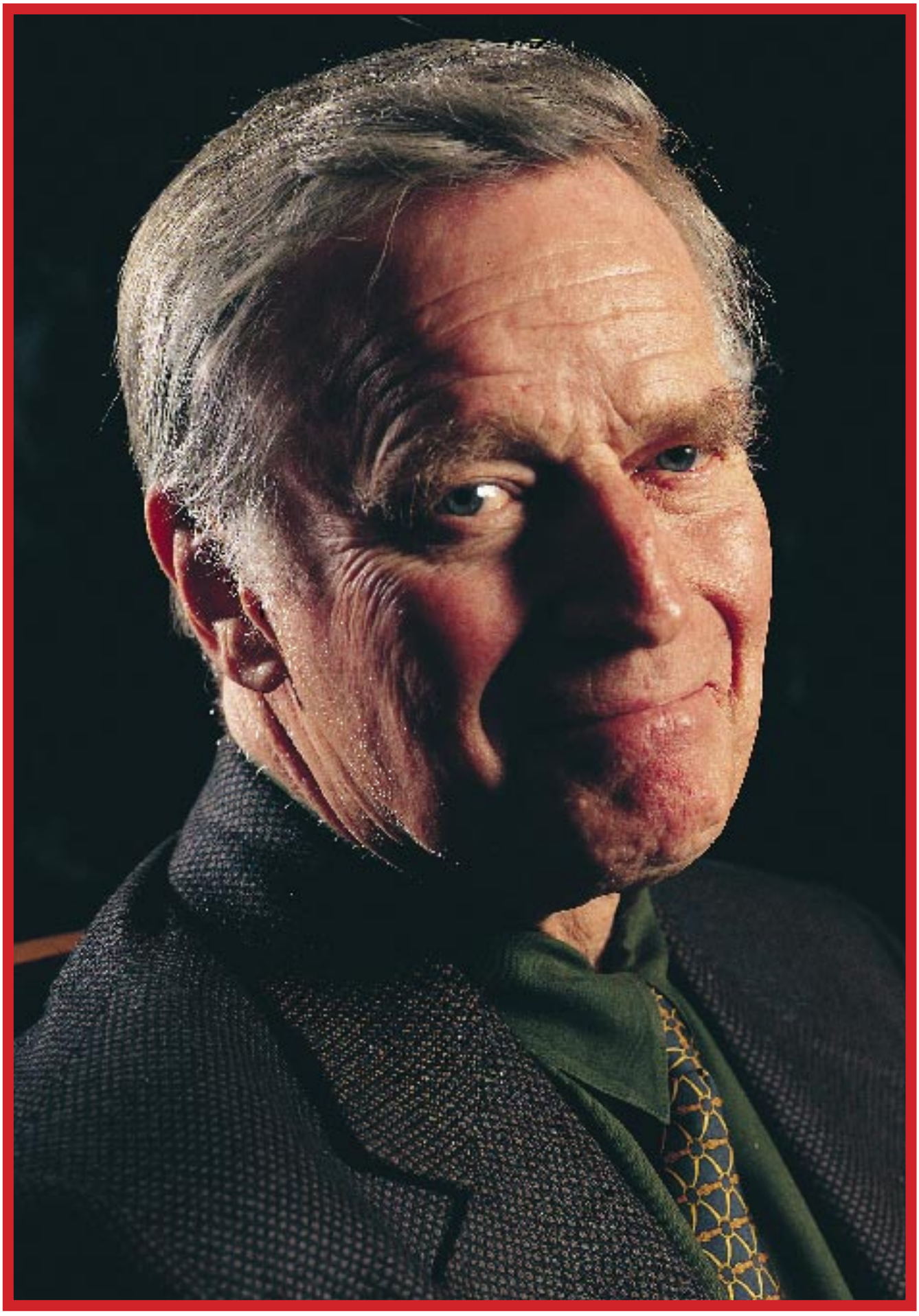
Both suites state that 8Mb is the minimum memory requirement. In practice, to run more than one application you'll need 12Mb and to run the suites as they're intended, 16Mb memory and a DX/2 66MHz, or better, processor.

**Lotus SmartSuite**

**Price** £499; upgrade £179 from any competitive application or suite
**Contact** Lotus 01784 445808.
Fax 01784 469342. Web www.lotus.com

**Microsoft Office**

**Price** £360; Office Pro £460; Individual apps £220; Upgrade to Office Standard £199; £299 for Office Pro; £99 for individual applications
**Contact** Microsoft 0345 002000.
Fax 0141 2264197
Web www.microsoft.com



# Holy Roller

**Who could be better qualified to be at the helm of a CD-ROM about the Bible than Charlton Heston — the archetypal Biblical epic star. Michael Hewitt meets the man and hears the Good News.**

PCW Charlton Heston Photography by John *Millar*

I met the man himself over a glass of wine and canapés, in GT's offices on the Marylebone Road. We talked about the *Voyage Through the Bible*, technology and life in general… at least, as much of it as we could cram into my allotted 15 minutes. He had a pressing appointment with Kenneth Branagh later in the afternoon, and chatting to someone from *PCW* took second place. Anyhow, the first question concerned the CD: what, to use a luvvie term, was his motivation?

"A few years ago, I realised that the Bible would make excellent material for a TV series," he said. "So I approached the TV people with a view to doing a personal documentary. This was almost unique among the projects I've done in my life in that everyone we went to said 'What a great idea!'"

A great idea because Charlton Heston came up with it, I suggested. Maybe a concept such as *Quentin Tarantino's Voyage Through the Bible* wouldn't have got them quite so excited? "I am perhaps better equipped to it than most," he agreed. "But it is a marvellous idea, nonetheless. An even better idea for a CD-ROM."

Where did that idea come from? "I'd heard Stephen Spielberg predict that CD-ROM is the future of the moving image. Within two years, I believe the PC and the television set will be one unit. So when one of our people on the film unit suggested we bring out a CD-ROM of *Voyages Through the Bible*, I was all for it."

Some people complain that transferring the Bible to CD-ROM risks trivialising it, I said, turning it into little more than a computer game. Naturally enough, he disagreed.

"That's like saying if you make a movie of Hamlet (which incidentally, Ken Branagh is doing, and I'm going to be in it) that trivialises Shakespeare's text. No. I think one of the unusual things that a CD-ROM does is to treat the Bible — or at least, the stories that I have chosen to relive from both Testaments — as stories. And that's how they began. People were telling those stories around campfires before the Phoenicians had even invented writing. Then they were set down in written form. Therefore, a CD-ROM is just getting the word of God across more easily in another format. First, there was oral tradition, then written, and now we have CD-ROM. It is just another natural development."

When did he first come across the technology? "Curiously enough, my wife introduced me to it. My wife is a photographer. For our 50th wedding anniversary (obviously a big anniversary) I said: 'What do you want, honey? A diamond necklace?' She said: 'I want digital equipment for my darkroom.'

"It turns out a diamond necklace would have been cheaper. But I bought her a PC with a CD-ROM drive. Now she stores all her photographic negatives on the disc and manipulates the images on-screen. It's amazing: she's able to do so much more in terms of processing than she ever could before. Indeed, she

seldom does much conventional work in her darkroom now."

Heston himself has also become a convert to computer technology. His last two books were written using an IBM PC. Is he likely to go all the way and start surfing the Net? "No, I'll stick to word processing. People say to me: 'Boy, don't you want to get on the Internet?' But I reply: 'I spend half my life talking to strangers. So why should I want to go online and search out some guy in, say, Lisbon whom I've never met?'"

How is technology in the film industry going to affect his own job? "It already is. Take editing, for example. Twenty years ago you sat over a Moviola. You had to pull sequences together from hundreds of printed takes, set up on racks. It could take a full half day just to edit one scene. Today, the computer has revolutionised all this. Now all printed takes are transferred to a single computer disk stored in memory. The director sits in front of a video screen and can call them up instantly. What used to take days now only takes hours."

He'd been quoted as saying that epics along the lines of El Cid and Ben Hur would be impossibly expensive to produce nowadays. But might not digital technology mean you could do away with costly location shooting and a cast of thousands?

"Currently, no. Digitally, I'm sure you could turn 1,000 extras into the 8,000 we used on El Cid. But you couldn't really have them all besieging Valencia. You still need something to photograph. Of course, if we want to look far enough ahead, it may be that in ten or 20 years (when I won't have to worry about it) all the sets will be created by computer; in fact, everything except the actors with speaking parts. They'll be filmed against a neutral background and then dropped in electronically."

Might it not also be possible to create the actors digitally? "It might indeed. And then I'll be out of a job. So let's hope that's way off in the future."

## Charlton Heston's Voyage Through the Bible: The New Testament

Click on the start-up icon. Cue stirring, epic music. The screen opens with an aerial view of Jerusalem circa 100AD, orbits the walls, and then zooms in to a 3D graphic of the Second Temple. "I'm Charlton Heston," intones the voice-over "I'm not a priest, or a scholar. I'm an actor. I tell stories. I want to take you on an odyssey. On the way, I'll tell you some of the oldest, greatest stories on earth — the stories of the Bible."

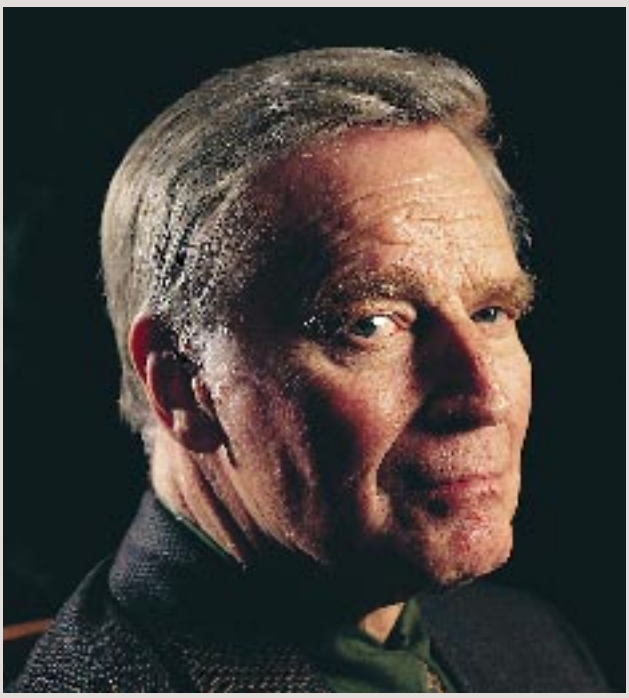
This has got to be one of the best-produced CD-ROMs I've seen in a long time, which isn't surprising given the money and people behind it. The whole venture was originally conceived by Charlton Heston as a documentary for cable TV. This CD-ROM marries 20 minutes of live-action footage from the series with new, specially created material. There are digital reconstructions of ancient buildings, 100 masterpieces of art, excerpts from famous orchestral masterpieces, and Heston's narration.

When you install the program, a version of Apple's QuickTime for Windows is installed at the same time. You'll need at least 8Mb of RAM, though 16 is preferable. Your screen must also be capable of displaying 16-bit images with upwards of 65,000 colours.

Once installed, the program is simple enough to use. If you have problems, click on "Help" and Chuck's voice tells you what and where to click. After the initial preamble and opening credits, you arrive at a start-up screen with four self-explanatory windows: Biblical stories, Voyages around the Holy Land, Jerusalem, and Art and Music.

Select Voyages, for example, and you get a map of ancient Palestine, divided up into Galilee, Samaria, and Judaea. Select any one of these, and you're presented with a larger scale map scattered with jar and column icons.

Clicking on a jar brings up a description of one of Jesus' miracles, plus a graphic. Click on a column, and you get a video of Heston emoting on the subject and describing the setting and historical background Sometimes he's a bit OTT, but then he is noted for getting very passionate about all things religious.



Whenever you play a Story or Voyage, the program automatically creates a Link menu. So, for instance, on exiting the story of how Jesus recruited his disciples, you can click on the Art window, and Heston narrates a short documentary about how artists through the ages have depicted the apostles. Or click on Text, and you can read the corresponding New Testament verses.

Actually, the Biblical text element is the only disappointment here. It's not nearly comprehensive enough — I was expecting the whole of the New Testament. Nor, as in a program such as the DOS-based "Multimedia Bible", can you type in a keyword and bring up all the Biblical verses containing that word. Therefore as a scholarly concordance, it isn't much cop. Probably a minor oversight, though.

The graphics and video, which, after all, are what a CD-ROM is really all about, are superb. One of my favourites has got to be the 3D reconstruction of the Second Temple — an interactive walking tour reminiscent of Doom. As you enter the courtyard, you half expect to be able to zap moneychangers or score points for knocking off Pharisees.

At a recommended retail price of £39.99, "Voyage Through the Bible" is an excellent buy. If you're at all religious, it provides a wealth of background detail — and even if you're not, it's an excellent historical reference tool in its own right. In the first quarter of 1996, the Old Testament will be out.

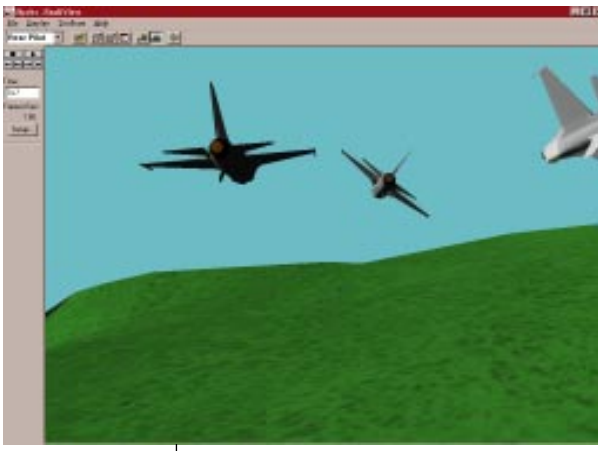
● *Contact: GT Interactive Software 0171 258 3791*

# The R3AL Deal

**Realimat claims to bridge the gulf between programming games and creating 3D. Simon Rockman asks whether this toy wonder could revolutionise 3D graphics.**

Ask the average person which countries do what in the PC industry and you'll get some stock replies: the Japanese design and manufacture notebooks and memory, the Taiwanese manufacture cases and motherboards, while the Americans do the lion's share of PC programming. What often gets overlooked is the areas in which the Brits excel, such as 3D programming — the kind of programming required to make games like Doom come to life.

The boom in home computing in the early eighties created a generation of 3D graphics programmers; the UK has more skilled graphics programmers than anywhere else. Most of the major console hits were programmed here. Last year's Christmas hit on Nintendo was Donkey Kong Land, a 2D game with 3D-rendered images which was programmed by Rare in Leicestershire. The year before, the hit was a real 3D game, Starwing, from Argonaut Software in London. One of the newest companies to emerge as expert in 3D is Datapath of Derby. Datapath, best known for its high-end video-cards, has applied the expertise gained in writing complicated drivers and bespoke applications into its first venture into 3D graphics programming, RealiMation.



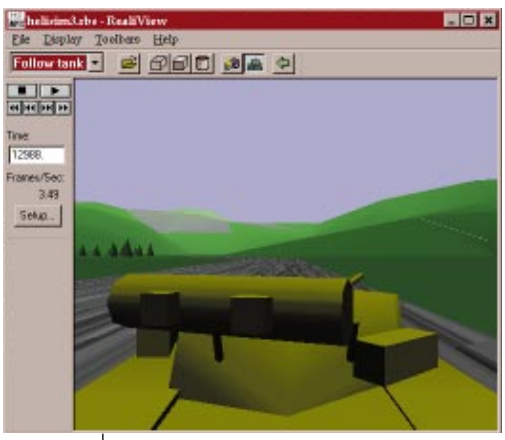
*Convincing pictures can be produced, but the update speed is poor*

### The RealiMation solution

Programming 3D graphics is difficult — particularly if your skills lie elsewhere. The old-fashioned solution to this was either to recruit programmers who know 3D, or to sit down with the text books and teach yourself. Recruitment has proved difficult. Finding the right person is hard enough, but they then have to be taught about your application, methods of working and libraries. Teaching yourself solves these problems but is slow. Not only does it take a long time to understand the problems, write the code and test it, but the results are usually sub-optimal. A programmer or mathematician new to 3D is unlikely to produce code which runs as quickly as a programmer who has been getting lines to move at breakneck speed since the heady days of the Sinclair Spectrum.

Datapath claims to have provided a way for programmers with little or no experience in 3D to tap the resources of those programmers who are experts. RealiMation, pronounced *Re*-alimation, is a suite of programs which allow programmers to create 3D environments. It is not a rendering library. In fact, it needs a library to work. RealiMation currently supports Open GL and Criterion's Renderware as standard, with other versions currently in development. Datapath is working on systems for Rendermorphics — the 3D API Microsoft liked so much it bought the company — and Brender, the system from Argonaut Software which has been seen in the PC game FX Fighter. The new Microsoft release, 3D Movie Maker, includes Brender and will soon have hardware support.

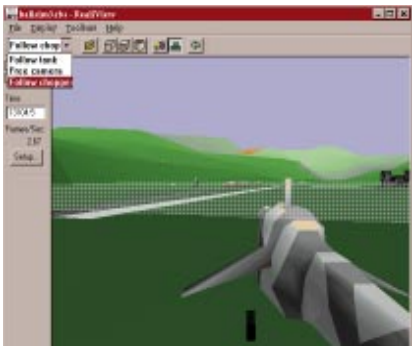
The ultimate idea is that whatever rendering system the programmer wants to build, the software around can be used by RealiMation. There is support for sound as well as 3D graphics, so all the programmer has to worry about is the application. RealiMation acts as an interface layer between the application and the rendering system. A programmer might want to choose one rendering system for prototyping and then, for reasons of cost or performance, another system for the equipment which is installed. As the technology improves, a programmer might want to switch from one rendering system to another. With so many rendering systems around at the




*The system can process lots of operations at once. This view from a tank is an alternative to one from a helicopter*

moment, it is a wise precaution for programs which are likely to have a long lifetime. Games, which are not updated, can have custom-written routines and be hard-coded for a renderer, but for flexibility the RealiMation approach makes life much easier.

The software consists of three main sections: the core application libraries, the support libraries and drivers, and the RealiMation editor — the world-builder. Datapath sees some application for this in games development, but this is typical of the naive attitude of companies who don't really understand what goes into



games development. The software is much better targeted at its other market: high-end simulation and virtual reality. There is a lucrative market in the military and in industry. RealiMation can cope with multiple screens and machines, producing the same simulation across a network. One key market for this is air traffic control simulation, but there are lots of other simulation environments (tanks, shipping and factories) where a system can be built quickly. The idea isn't new: PostScript was invented as a result of research work done on a shipping simulator.

**Above** *The disc on the top of the helicopter gives a realistic view*

**Right** *The knight demo doesn't have a lot of work to do, but is still slow*

## DIY graphics

In the games field, Datapath sees scope for producing games which can be made editable. This means the games player can decide that a car can fly, or grow to six times its normal size, rather like the add-on WAD files for Doom but as a standard across a number of games. RealiMation could provide scope for more advanced games editing.

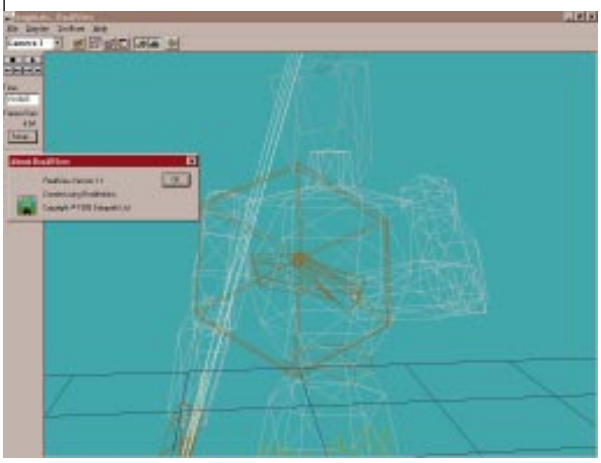
The software is an animation editor designed to support a 3D world, it's time-based rather than frame-based. Processor power permitting, a minimum number of frames is shown, to ensure the right things happen at the right time. RealiMation will draw frames at a rate determined by the hardware. An image might become jerky but will produce the best possible results — paths of moving objects are changed to ensure the shape reaches the right keypoints.

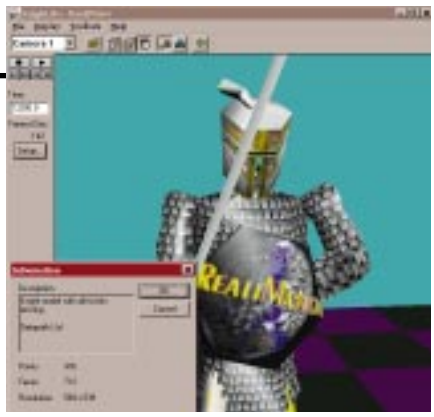
The world builder allows the programmer to place objects in the 3D environment and manipulate them. If a plane is made to fly around a tower it will bank correctly. The plane can be set to follow terrain so that it hops over mountains or the nose rises and falls correctly.

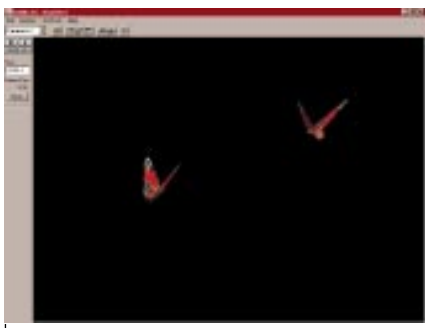
What the World Builder cannot do is create shapes. The plane or spaceship must be produced in a 3D editing package such as 3D Studio. The software is essentially a choreographer for a number of actors placed by the programmer, and this is an ideal generalised approach.

The RealiMation editor is the world-building tool used to create the backdrop. There is a library of routines called rmation.lib, below which are the geometry and device drivers. The idea is that the programmer can be as hands-on or hands-off as necessary. There is an option to use the RealiBase data object which stores the scene, and the whole lot is hierarchical.

**Below** *Demos can be shown wireframe*







*The butterflies demo gives a sensible frame rate but doesn't have many polygons*

## In the real world

RealiMation is great for prototyping and ideal for Datapath bespoke work. This is needed for, say, linking a number of machines together and providing the same views on all of them. In an environment where you can go for a faster machine if the software is too slow RealiMation is fine: it saves on the major cost — programming time.

But in the world of consumer applications it is way too slow — by an order of magnitude. An animation at anything less that 10fps is awkward. The Beta version of RealiView, the viewer program for RealiMation movies, struggled to reach 4fps on a DX4-100, with fairly simple images. While the program is showing you one scene, it is calculating the data for a view from any other position, which allows instant changes of view. In practice, this can be achieved using more efficient techniques.

But if your work involves modelling environments where there will be a lot of testing and changes, RealiMation is an option you should explore. Datapath offers excellent technical support, and if you are a major customer it is likely it will help you get your application working. The company may be too wrapped up in the project to see the commercial limitations, but if it matches your requirements you may well benefit from the tightly focused development.

*Datapath is on 01332 294441*


# Small but perfectly formed

**The latest breed of document scanners have been designed to combine the reliability of flatbed scanning technology with speed and portability, but you should think hard about what you want your scanner to do before choosing one. Adele Dyer takes her pick.**

PCW **Document Scanner** Photography by David *Whyte*

For years, document scanners were the great idea that never quite got off the ground. The paperless office needed a handy office tool that could sit on a corner of the desk to scan a document in quickly. The only options available in the past were a vast flatbed which took ages to scan and was very expensive, or a cheap handscanner which often gave suspect results.

The obvious advantage of a small document scanner is that it is static and so produces the reliable results of a flatbed, but faster, cheaper and without taking up valuable office space.

Meanwhile, the software sold with the new breed of document scanners is geared towards office needs, rather than taking in the panoply of possible uses for a scanner. If you need to digitise photos for publication, a document scanner will not meet your needs. But if you want to take "snapshots" of documents and so create a paper-free office, it is more useful to have a basic scanner bundled with filing and OCR packages.

As can be expected from a relatively new concept, all these document scanners offer slightly different features and have strengths and weaknesses according to their main purpose as seen by the manufacturer.

## Hewlett-Packard ScanJet 4s

On unpacking and setting up the ScanJet 4s, you could be forgiven for thinking you had in fact bought a Visioneer PaperPort with an HP badge on the front. In fact, Hewlett-Packard has licensed the Visioneer software and the housings of its various scanners are just spookily similar through pure coincidence.

Evidence of differences from the PaperPort began with the need to calibrate the scanner, and a slightly less generous software bundle — you don't get CardScan or PictureWorks Copier. However, the basic driver and OCR software are exactly the same as that supplied with the PaperPort and this is boasted on the title bar. Again, automatic recognition of compatible hardware and applications was painless and seamless.

Passing documents over the CCD was not as smooth on the ScanJet 4s as on other scanners in the test. It had to stop to think about what it was doing several times while scanning an A4 sheet and this slowed down the whole process considerably.

Scanning photographs on the ScanJet was not as successful as you might expect from a manufacturer well known for its flatbeds. Shades of grey were not picked up well on black and white photographs, giving a mottled effect, and the CCD created streaks on the photograph.

Despite this, the HP proved robust, standing up well to heavy scanning needs. If anything, it suffered from the PaperPort link as it does not have the same polish in looks or in operation. However, on its own, it is still a very decent machine, solid and reliable with the ease of operation offered by the PaperPort software.

## Epson LapCAT GT-300

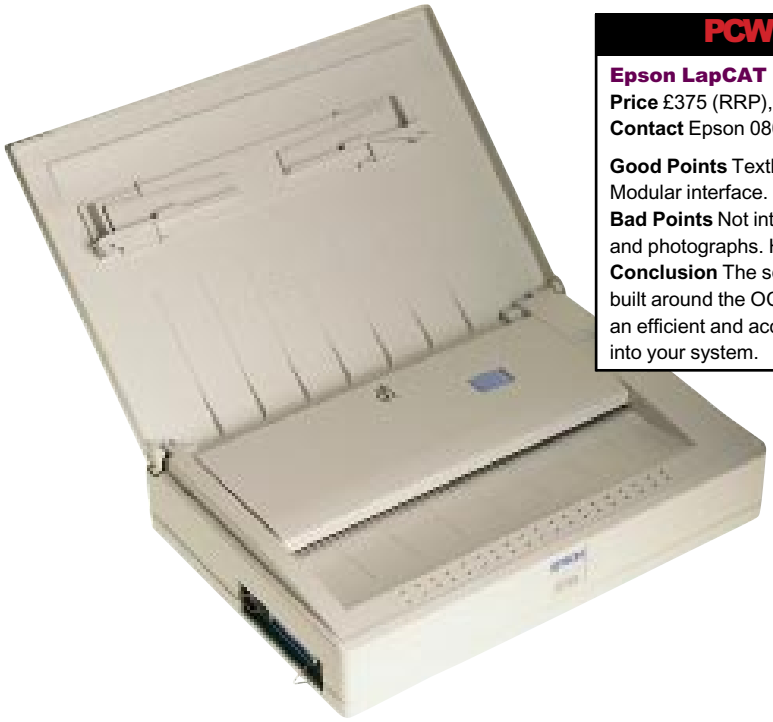
The LapCAT betrays its size even before you see it. It is larger than many of the scanners in this test, about the size of a notebook computer. The model we tested came with an interface card which we dutifully installed before discovering in the read-me that we could simply have plugged it into the parallel port.

Unlike the more common integral desktop interface, this uses a series of component parts. The control panel lets you choose how to get in your scans, whether scanning them alone or straight into the TextBridge OCR package. This pays dividends as the scanning time is quite long, but combining the two

### PCW Contacts

**HP ScanJet 4s**
**Price** £310 (RRP), £235 (street)
**Contact** Hewlett Packard 01344 369222

**Good Points** Software.
**Bad Points** Quite slow. Does not process photographs well.
**Conclusion** Solid, reliable, small and will do most things you need from a document scanner.



## PCW Contacts

**Epson LapCAT**
**Price** £375 (RRP), £299 (street)
**Contact** Epson 0800 289622

**Good Points** TextBridge OCR package. Modular interface.
**Bad Points** Not intended for saving images and photographs. High system requirements.
**Conclusion** The scanning capabilities are built around the OCR function, but as such is an efficient and accurate way of getting paper into your system.

operations cuts down time significantly.

TextBridge gives you considerable scope for the way you scan and then OCR your documents. Handy functions include a fax option which allows for the degraded images and mucky type you get on faxed documents. You can also choose to verify any suspect words as you go, which gives you the dual benefit of more accurate, if slower, results and training TextBridge in the process.

The filing module, Visual Recall, was one of the more impressive bundled products. It was more like a free text database than a simple filing system. You can index your files with details such as content, author, title and keywords, or alternatively you can search for specific words included in the database. This of course depends on having recognised your documents, but is still extremely useful.

Sadly, the Epson let itself down badly when scanning photographs. The options available in terms of greyscales are not sufficient to achieve good-quality scans, while the files are saved as bitmaps, slowing down the process and choking your hard disk with enormous files. However, you can convert files and save them as .GIFs. Also, it was not possible to hold smaller photographs in position to scan them in, so there are no test results for the 6"x4" photographs.

### Logitech PageScan Colour

In theory, the Logitech should have been extremely simple to set up. It plugs in via the parallel port and has a switch box to let you plug your printer in at the same time. I had problems setting it up however, getting a fatal error when I tried to calibrate the scanner.

Once it was up and running, though, the PageScan Colour was impressive. Bundled with the scanner comes an OEM version of TextBridge, the PaperMaster filing package and PageScan Image, a very simple image display and manipulation package. All of this can be managed from a control tool bar which launches automatically when the scanner senses paper coming in.

All the software elements are designed for maximum ease of use. The specially adapted OCR elements let you make scanning choices based on the kind of print you have. For example, there is a setting for tinted text or a tinted background. You can also OCR directly into your word processor, which is sensed automatically on installation.

The highest resolution available is 200dpi which should be more than adequate for most of your scanning needs. Good results are achieved when scanning colour photography at this resolution. Obviously it is not professional quality, but it is quite sufficient for printing a newsletter on a colour inkjet. Image manipulation is limited in PageScan Image, but you can do very basic tasks such as adjusting brightness.

The cleverest thing about this scanner is that it can scan bound books. It comes off its stand and when placed on the document in question, walks itself across the page, sensing when to stop before it falls off the end.

Filing could not be easier. The package, DocuMagix PaperMaster SE, is built to look like a real filing cabinet so you can label drawers and see dividers within them like paper files. The software also tries to recognise the kind of document you have and makes filing suggestions accordingly.

## PCW Contacts

**Logitech PageScan Colour**
**Price** £299 (RRP, street)
**Contact** Logitech 01344 894300

**Good Points** Versatility, high-quality colour scanning, good supporting software.
**Bad Points** Judging by my own experience, can be surprisingly difficult to set up.
**Conclusion** A colour scanner for not much more than you would spend on a mono document scanner and at a fraction of the size of the cheapest flatbeds.

## Microtek PageWiz

Microtek has a good reputation for building quality flatbed scanners so we had high hopes for the PageWiz, especially as it comes in at an exceptional £149. Installation is via the parallel port and it is powered with an external power supply rather than taking its power straight from the PC. The software went on without faults and to calibrate it you just need a blank piece of A4.

An automatic paper sensor picks up the paper and launches the interface software, PageSuite. It is all too easy to get the paper slightly off-centre as you scan, however, and there is no de-skew facility.

The scanning itself is easy to adjust using a highly graphic interface. There are no dpi settings to confuse the novice scanner, just normal, fine and extrafine. For accurate OCR you must have the scanning set at fine. This means larger file sizes, but there is very little point in scanning at a lower resolution if you want any sense out of the OCR.

The OCR itself is by Caere — a limited edition of OmniPage. Its results are okay, but again the resolution has to be quite high to produce decent results. Neither does it have all those subtle extras like manual verification to improve its performance.

The greatest disappointment, however, is that it does not cope at all well with photographs — black and white or colour. The images produced are very rough, even when scanned at a high resolution.

### PCW Contacts

**Microtek PageWiz**
**Price** £149
**Contact** Microtek Europe BV
0031 10 242 5688

**Good Points** Very easy to set up and use.
**Bad Points** Does not cope well with photographs.
**Conclusion** Good for computer novices who simply want to scan without understanding how to do it.

As if by compensation, the filing system is very good. You can access files directly from a button on the desktop interface. Creating and finding files is simplicity itself — everything is there to be viewed.

All in all, this was not the most impressive scanner we saw, but it does have the advantage of being cheap and performs reasonably well at basic electronic paper management.

## Plustek PageReader 800

Plustek might not be a name you are familiar with. It is a US/ German/ Taiwanese company which specialises in producing scanners, mainly flatbeds.

Due to its lack of publicity, we were not expecting great things of this scanner. But as soon as it came out of the box we were impressed. It is the lightest and smallest of the bunch and, at £149, the cheapest. It is easy to install via a small interface card and operates with TWAIN drivers. We tested it with Recognita Pro, but by the time this appears, it will be bundled with TextBridge. Otherwise, the bundle consists of Photo Plus and a saving facility.

Like the Visioneer PaperPort, the PageReader 800 has automatic paper sensing. However, unlike some of the scanners in this test, it does not have an integrated desktop allowing you to access the various related software packages via buttons. Instead it opts for a standalone control panel arrangement. This detects the bundled software packages and leaves you buttons free to add whatever else you want to put on, such as your own saving sites or applications such as Word or Paintshop Pro. Working with the paper sensing on the scanner, you can simply feed in your document and the application of your choice is launched and activated.

One huge disappointment was that the PageReader 800 we saw did not take photographs. It dealt very well with pictures on ordinary paper, producing crisp images, but actual photographs were too thick to feed through the scanner. The distributors were very surprised at this and claimed not to have had such a problem themselves.

### PCW Contacts

**Plustek PageReader 800**
**Price** £149
**Contact** Scan Direct 01292 671676

**Good Points** Perfect for document scanning, OCR and saving.
**Bad Points** Will not scan photographs.
**Conclusion** Excellent value for money.

## Sicos Colour Page Scanner

This scanner is remarkable for two reasons: it's a colour scanner, and it's been on the market for some time. Sicos is a Swiss company which has been operating for about seven years and which, like Logitech — the other manufacturer with a colour scanner in this test — is mainly a mouse manufacturer.

When we first saw this machine, which has been on the market for around 18 months, it was running under Windows 3.1. The installation under DOS and the fitting of an interface card was a tad fiddly, but manageable. Since then we have switched over to Windows 95 and the new drivers make the installation a piece of cake.

The Sicos is the largest in the test, but it makes up for this in robustness. Again, it is one of the slower scanners, but as it is bundled with TextBridge you can save time by scanning and OCRing all in one go. The bundled software includes a fax/copy facility which allows you to fax scans direct, or to use your printer as a photocopier, again by sending document images straight to the printer. TextBridge, the bundled OCR package, performs very well, lets you verify as you go along and retains formatting from the original document.

It deals well with colour photographs, producing good colour duplication and definition. However, as you would expect, the process is slow and although you can theoretically scan at very high resolution, the size of the file will be prohibitively large and the time taken will probably not be worth your while. Photo manipulation is not made easier by the bundled Photo Plus, a package which is pretty much stardard with these scanners and which has little to recommend it.

The feel of the Sicos was altogether one of solidity and good performance. It was surprisingly fast and accurate and was the only one to offer high-resolution colour scanning.

### PCW Contacts

**Sicos Colour Page Scanner**
**Price** £249 (RRP), £199 (street)
**Contact** Sicos 00353 1 456 9383

**Good Points** Colour scanning at high resolutions.
**Bad Points** Quite large compared to others in the test.
**Conclusion** If you have a little extra desk space this is a highly competitive machine.

## Umax Page Office

Umax is well known for its flatbed scanners, so we were not surprised when this was one of the first document scanners on the market. The interface card is SCSI-II and the drivers used are TWAIN, so you should have minimal problems at this stage. The software also comes with a useful uninstall feature.

The desktop has a large surface where your scans appear as thumbnails. Functions and other applications are displayed as buttons. Your printer, fax, email facilities and Write are all detected automatically. Other compatible applications such as your word processor can be added but without their icons or name. Annoyingly, you cannot name your scans on the desktop and filing involves a "save as" procedure — not a simple drag and drop into a folder on the desktop.

The OCR engine kicks in when you switch from image to recognised mode. However, it does not activate automatically when you put a scanned document into your word processor, so you can transfer a load of nonsense.


### PCW Contacts

**Umax Page Office**
**Price** £399 (RRP), £299 (street)
**Contact** IMC 01753 830999

**Good Points** SCSI -II interface and TWAIN drivers make it easy to install.
**Bad Points** Clumsy file management. Problem with CCD.
**Conclusion** A good scanner, slightly marred by adequate but unimpressive software.

The original formatting is not saved, and the OCR package cannot recognise large or unusual fonts or even common symbols such as £ (this is a little unfortunate if you are scanning invoices, as it tends to substitute a row of 1's). As the scanner is TWAIN compliant, however, those with heavy OCR needs could consider investing in another OCR package.

The actual scanning is very good. There was a slight problem with the CCD — it does not see the top 0.5cm of photographs. This was a slight annoyance, but the quality of the scans was still very good. The PageImage software bundled with the scanner is not PhotoShop but it does offer enough tools for basic photo manipulation. Documents on thick paper are hard to force through, but there is no such problem with photographs.

### Visioneer PaperPort Vx

When we first looked at the Visioneer PaperPort last year it was one of the first document scanners on the market and extremely good at its job. There is now a new version out, complete with improved chip and image enhancement technology.

The supporting software is simplicity itself to use. All compatible applications (now numbering over 100) and hardware appear as link buttons on the desktop, as do most of the functions and the files where you can save your work. File names appear with the scan thumbnails and can be changed, as in Windows 95, by over-typing them.

## PCW Contacts

**Visioneer PaperPort Vx**

**Price £299** (RRP, street)
**Contact** Computers Unlimited 0181 200 8282

**Good Points** Excellent software, packed full of good ideas and very easy to operate.
**Bad Points** Fault when scanning straight through.
**Conclusion** Despite the fault, the best buy in the test.

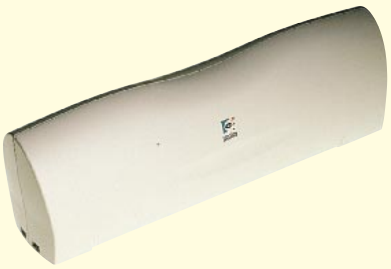
The OCR link is invisible — OmniPage LITE is launched as soon as you drag a thumbnail onto the word processor link. The formatting remains intact. Even spreadsheets can be scanned, OCR'd and fed into Excel. The results are not perfect, but much faster than having to enter the information by hand.

The automatic edge detection, crop and clean-up facilities go a long way to producing high-quality document scans which will OCR well. Any shape of document can be fed in and cropped before OCR, including articles torn out of a newspaper.

Documents do not need to be saved and can be dragged and dropped to files on the desktop. There are browse and find functions to help you navigate your files. Alternatively, files can be exported as bitmaps, .GIFS, .TIFs, .JPGs or PCXs. Files can also be imported to make faxing easier.

However, there was one fault. When scanning in photographs flat, the hardware crashed repeatedly, losing its connection to the PC. The quality of the photographs was also less than perfect. The edge detection did not work so had to be cropped, and the definition was not ideal. However, the files were compressed so did not take up much disk space.

## Document Scanner Technology



If it is such a good idea, why haven't document scanners been around for years? Well, the simple answer is technology. Up to now you had a choice: either of a hand scanner which was limited in the amount of text it could scan at one time, or of a large and expensive flatbed, possibly with an automatic sheetfeeder.

The advent of single-pass scanning heads was an important step in the evolution of document scanners. Older models used to make three passes for a colour scan, once each for red, green and blue. Since document scanners feed the paper past a fixed head, a single-pass device is an essential requirement.

CCDs have also reduced in size. In the case of the Microtek PageWiz, the CCD is approximately 2cm wide and 2cm deep. Lenses and mirrors enable the full A4 width to be captured. These tiny CCDs allow manufacturers to produce small cases, only a few inches tall and deep, and barely any wider than a sheet of A4.

While conventional OCR takes place on monochrome line-art scans, most scanners are greyscale devices. Greyscale CCDs are so commonplace that there is no particular cost advantage in fitting monochrome ones instead. The mixed results of scanning photographs demonstrated clearly which units featured high-quality CCDs.

For OCR purposes, scanning in greyscale can sometimes help. Most good OCR packages pick up anti-aliasing (a rim of lighter grey around the letters) to help them decide which letter they have. However, all these scanners also offer black and white modes. Monochrome images require 1 bit per pixel as opposed to 8 bits for greyscale; consequently 1-bit images are eight times smaller than 8-bit at the same resolution, saving valuable file space. One-bit images compress highly, too.

## Editor's Choice

Choosing just one document scanner to win Editor's Choice is not easy. The options are wide and there is no one solution which will suit everyone. The choice you make will depend on what you want to do with the scanner. The three I have picked out for special mention are the three most versatile ones.

The Logitech PageScan Colour immediately springs to mind when you mention versatility. It has colour capability — of course — and can be detached from its moorings to scan bound documents. In addition, the software is easy to pick up and operate with one of the most transparent operating systems.

The Plustek PageReader 800 also scored highly for its versatility. It scans accurately and swiftly, the software shows no particular weaknesses and is easy to operate, if not as transparent as that of some of the other scanners tested. But where this scanner really scores is in its value for money. At around half the price of almost all the scanners in this test, it is a real winner for those who simply want a cheap scanner which will do a decent job and are not unduly bothered by the document scanner equivalent of go-faster stripes.

But if you want it all then you will have to plump for the Visioneer PaperPort. The extras on this scanner are almost bewildering in their extent. Uses have emerged for this machine which had never been thought of until those clever people at Visioneer started to increase its utility. The result is not only a scanner which will detect your printer, fax/modem and word processor, but also any of over 100 possible applications which work with it.

Of course, when Visioneer produces a colour version of this scanner the company will doubtless clean up, but even in mono it is exceptionally good.

## TABLE OF FEATURES MINI DOCUMENT SCANNERS

| | Epson | HP | Logitech | Microtek | Plustek | Sicos | Umax | Visioneer |
|---|---|---|---|---|---|---|---|---|
| **Manufacturer** | **Epson** | **Hewlett-Packard** | **Logitech** | **Microtek** | **Plustek** | **Sicos** | **Umax** | **Visioneer** |
| **Model** | **LapCAT** | **ScanJet 4S** | **PageScan Colour** | **PageWiz** | **PageReader 800** | **Colour Page Scanner** | **Page Office** | **PaperPort Vx** |
| **Contact** | Epson | Hewlett Packard | Logitech | Microtek Europe BV | Scan Direct | Sicos | IMC | Computer Unliimited |
| **Tel** | 0800 289622 | 01344 369222 | 01344 894300 | 0031 10 242 5688 | 01292 671676 | 00 353 1 456 9383 | 01753 830999 | 0181 200 8282 |
| **Fax** | 01442 227227 | 0800 960271 | 01344 894303 | 0031 10 242 5699 | 01292 671678 | 00 353 1 450 8765 | 01344 872868 | 0181 200 3788 |
| **RRP** | £375 | £310 | £299 | £149 | £149 | £249 | £399 | £299 |
| **Street Price** | £299 | £235 | £299 | £149 | £149 | £199 | £279 | £299 |
| **Connection** | | | | | | | | |
| **Interface card** | ● | ❍ | ❍ | ❍ | ● | ● | ● | ❍ |
| **Parallel port** | ❍ | ❍ | ● | ● | ❍ | ❍ | ❍ | ● |
| **Serial port** | ❍ | ● | ❍ | ❍ | ❍ | ❍ | ❍ | ● |
| **Bundled software** | | | | | | | | |
| **OCR** | TextBridge | OmniPage Lite | TextBridge | OmniPage | TextBridge | TextBridge | Integral | OmmiPage LITE |
| **Filing** | Visual Recall | Visioneer | PaperMaster SE | Integral | Scan and Save | None | Page | Integral |
| **Photo retouching** | None | None | PageScan Image | Integral | iPhotoPlus | iPhotoPlus | PageImage | None |
| **Links to applications** | | | | | | | | |
| **Automatic** | ❍ | ● | ● | ❍ | ❍ | ❍ | ● | ● |
| **Manual** | ❍ | ❍ | ❍ | ❍ | ● | ❍ | ● | ❍ |
| **Features** | | | | | | | | |
| **Dimensions (w x h x d - in cms)** | 30 x 21 x 6.6 | 32 x 9 x 7 | 21 x 7 x 9.2 | 28 x 11 x 5.6 | 29 x 8.5 x 6.5 | 33.5 x 10 x 23.5 | 32 x 13 x 12.5 | 32 x 9 x 7 |
| **Weight (lbs)** | 6.4 | 2 | 8.7 | 2.2 | 1.7 | 9.7 | 5 | 2 |
| **Sheet feader** | ● | 0 | ❍ | Optional | ❍ | ❍ | ● | 0 |
| **Autosaving** | ❍ | ● | ● | ● | ❍ | ❍ | ❍ | ● |
| **Automatic fax and printer detection** | ❍ | ● | ● | ● | ● | ● | ● | ● |
| **Colour scanning** | ❍ | ❍ | ● | ❍ | ❍ | ● | ❍ | ❍ |
| **Maximum optical resolution (dpi)** | 400 x 400 | 200 | 200 | 300 | 200 | 300 x 600 | 300i | 400 |

**KEY** ● Yes ❍ No

# An orderly few

**There are personal information managers and contact managers to suit every need but finding one that matches *your* requirements isn't easy. Paul Begg has reviewed what's available to help you put your personal and business life into apple pie order.**

If you want to get some organisation into your life and your business, you need either a Personal Information Manager (PIM) or a Contact Manager (CM). PIMs and contact managers are often thought to be more or less the same thing. Even some companies don't fully make the distinction, but there is a very real difference between the two.

In its truest sense a PIM is an electronic address book, a diary, and the back of an old envelope — that is, a PIM is a place for storing names, addresses and phone numbers, for noting appointments and making a list of things to do. A PIM can also be a place to record birthdays and anniversaries, store the type of information you may like to have ready to hand such as price lists, train times and notes of your expenses. The operative word is "personal": a PIM contains information about you, the user.

A contact manager isn't about you. It's about those with whom you interact, which generally means people with whom you do business. It lets you record the usual address details, but may also allow you to store such things as your contact's spouse's and children's names. It keeps a history of all your dealings with that client, too. The next time you see a client you'd be able to walk into his office and say something like "Hello, Mr James. How were those two weeks in the Dominican Republic? Did Mary like it? I bet Daniel and George loved those warm seas. Now when we spoke last, in March, on the 25th wasn't it?…"

More powerful Contact Managers should also let you know when to contact clients, when to bill them, send them reminders, and so on. And ideally it should have some kind of scheduling feature as well so you can schedule meetings, visits, and assorted other appointments; while at the heavyweight end it should be highly networkable and offer group scheduling, resource management and email. Remote file synchronisation — keeping the contact database of the on-the-road mobile user up-to-date with the latest information at the office — is another important plus of a fully-featured CM.

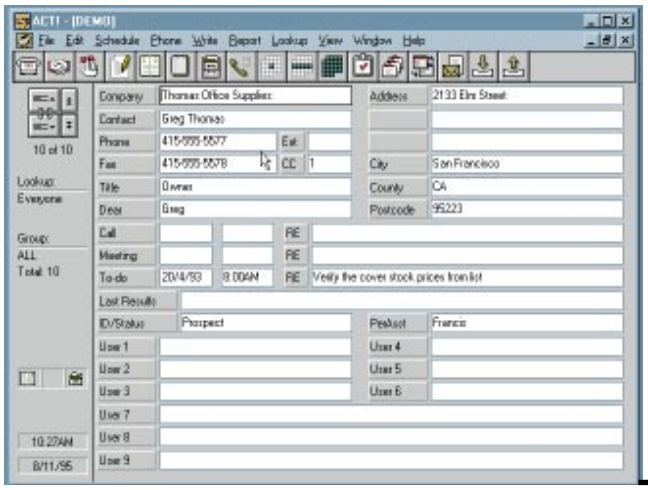
A PIM, therefore, is about you, whereas a contact manager is focused on your clients. The difference isn't quite that simple though — things never are! Developers have begun isolating and targeting sectors of the market and some of the software packages have become fairly specialised. For instance, Alpha Software has launched The Complete Home Suite, reviewed here, which no doubt is the first of many PIMs designed for the home user. Then there are the PIMs such as Sidekick which are intended for the SoHo (Small Office/Home Office) user, and PIMs like Organizer that attempt to bridge the divide and become a low-end contact manager. And contact managers themselves seem to be dividing into those designed for office-based sales teams and those for a sales force on the road: some aren't even for a sales force at all, and others aren't really CMs but specialist contact databases which store contact data and output it by almost any criteria you can imagine. These programs are not designed to keep you in touch with your contacts but for you to extract statistical data such as how many contacts you have in a specific postal code, or those who share the same surname.

Deciding whether you want a PIM or a CM, or something that tries to combine the basic tools of both, depends on your needs and this is one software category where practically every package does its job differently. The best advice we can give is: decide in advance what you want your PIM or CM to do, then try to get a demonstration of those packages, described here, that seem to fit the bill.

## ACT! for Windows 2.0

Contact management, as distinct from personal information management, was almost invented by a company called Contact Software International when it launched ACT! for DOS in the antediluvian mists of 1987. Over the years the program blossomed and contact management turned into a BIG software category. Then, in 1993, Contact Software International was bought by Symantec, a company then best known for its Q&A database and today for Norton Utilities. Since acquiring ACT!, Symantec has done practically nothing with it.

We first reviewed ACT! 2.0 back in July 1994 and in our last PIM group test in October 1994, when it was awarded the Editor's Choice. We observed in the July review that ACT! 2.0 was a minor upgrade; no more than a few tweaks here and there with some enhancements necessary to bring it into line with the



*ACT! for Windows 2.0 is a solid contact database that needs some attention from Symantec*

competition. This mainly included network and integrated email support. Now, round about 18 months later, we find that Symantec has still done nothing to ACT! and that ACT! for Windows 2.0 is the current version — but remarkably, ACT! remains a solid contact manager and a strong contender for the Editor's Choice award.

ACT! is one of the easiest of the high-end contact managers to use mainly because all contact details are contained on a double-sided file card. Each contact card has about 70 fields for contact and company name, address, phone and fax numbers, plus assorted other details. Additionally, there's a host of user-definable fields for other information you'd like to include, such as nicknames and spouse names.

Once the database has been set up, you can keep a record of all those "to-do" and "done" tasks associated with each contact. Once the to-do has been done, the details are automatically transferred to the contact's history file and stamped with the date and time.

There's an integrated word processor that although basic, is likely to satisfy letter-writing needs (which is all it's intended to do). ACT! will also insert address details into a letter or fax (you can fax from within ACT!) and there's all the usual stuff for setting alarms and producing contact reports.

ACT! is weak when scheduling appointments: these can only be scheduled at 15-minute intervals and two tasks cannot be scheduled for the same time; this is a hindrance if you want to meet more than one person within those 15 minutes, or want to schedule two appointments for the same time. There's no provision for entering timeless events either. And, ACT! lacks an expense account module (present in the old DOS version) which would otherwise be useful for mobile sales staff.

There's a separate package called ACT! Mobile Link which merges contact, history, and activity information from mobile salespeople into a central ACT! database. When the central database is changed, the information can be sent via Mobile Link to the appropriate salespeople.

There are other features, too. For example, the Electronic Literature Rack is where the sales manager can store price sheets, sales literature, and so on. These can be downloaded via Mobile Link by a salesperson, who will thus be assured of having the most up-to-date information. In addition there's a version of ACT! specially designed for the Psion 3a (see "Power in your pocket" on page 203).

It's remarkable that ACT can hold its own against all-comers and be a serious contender for our Editor's Choice award even though it hasn't undergone any kind of serious upgrade since version 1.0. One cannot seriously doubt that Symantec is committed to ACT! and we are conscious of the maxim "if it ain't broke, don't fix it", so there is no hard case for penalising this mature and robust product simply because Symantec hasn't released the sort of penny-ante upgrade about which some companies try to make a brouhaha. In the final analysis, however, one can't ignore the fact that in the high-end contact management stakes, ACT! is falling behind by a few furlongs.

## PCW Contacts

### ACT! for Windows 2.0

**Price** £189 (inc VAT)
**Contact** Symantec 01628 592222

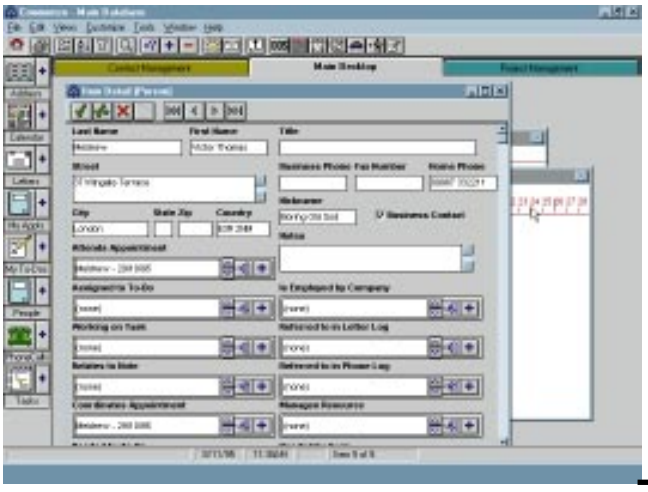
**Good Points** Easy-to-use, powerful and elegant.
**Bad Points** Lags behind the competition.
**Conclusion** ACT! remains a good contact database, its deficiencies reflected in the price. Symantec needs to demonstrate its commitment to this product.

### Commence 3.0

Commence has a reasonable pedigree. It was developed by New Jersey-based Jensen-Jones and under the name "Current" was adopted by IBM. The name was changed to "Commence" when the product was re-acquired by Jensen-Jones.

If Commence has a great strength it lies in trying to be all things to all people. Unsurprisingly this is also a weakness, though in this case not a particularly great one. Commence attempts to be a personal information manager and a contact manager and a standalone package, as well as one for network users. The result is a package that does pretty much everything but has a very steep learning curve. On the plus side, it has been reduced in price by about £100 since we reviewed version 2.1 in October 1994.

All information in Commence is in list form which can seem overwhelming when you start the program, and there is



*Commence tries to be all things to all people and generally succeeds, although the learning curve is steep*

a seemingly endless series of dialogue boxes open which list all your contacts, all your appointments, all your to-do's, all your… well, you get the idea. Connecting the data could be a nightmare, but Commence has particularly strong search capabilities which in fact make it fairly easy to find the information you want. You can search for a specified piece of text in all or any of the data lists.

All addresses are contained alphabetically in a ring organiser, similar to a paper-based organiser or the Filofax-look of Lotus Organizer. The entry contains basic information such as telephone numbers. Clicking on the contact name brings up a data card with additional information.

A core feature of Commence (though by no means unique to the program) is Agents, a kind of computerised Pavlov's dog responding to a stimulus, here called a "Trigger Event". Instead of merely salivating, Agents responds to the trigger by performing a function such as automatically re-invoicing a client whose account is overdue. Commence is supplied with some pre-configured agents and version 3.0 includes some new ones, but it's easy to configure your own.

Commence is flexible and has a considerable amount of integration. There are good printing options, report generation, and you can synchronise data with a laptop PC.

Version 3.0 has a number of new features which add to its strength. Data entry has been speeded up with the inclusion of Plus buttons on the View Bar: down the left-hand side of the screen are several buttons which launch different modules. One of these buttons is now marked with a plus (+) sign and clicking on this lets you add data directly to the appropriate category. In other words, you can add a new contact to the address book without opening the address book module. There's also a full complement of diary views by one day, two days, a week, two weeks, a month, and six weeks. Another new feature is support for Delrina WinFax 4.0, which can now use Commence as a phone book.

## The Complete Home Suite

The Complete Home Suite is an innovative personal information manager. Not only does it have a basic address book and contact manager, but there are also modules for keeping track of other personal details such as finances, possessions, and repairs and renovations you may have made to your home. There are 11 modules altogether.

The software, which runs under Windows 95 as well as 3.1 and comes on CD-ROM or two floppies, has been fully anglicised: US zip code has been changed to postal code, US state has been altered to county, and so forth.

Perhaps the most important modules here are the Phone Book and the Contact Manager. The Phone Book is a basic card index: one card per person, each card containing fields for address details, home and work phone and fax numbers. There's an area for making free text notes as well as a button to get your computer to dial the phone number for you. Although this is good enough for basic address book information it's not much good if you want to include cellular phone numbers (now very common with tradesmen such as plumbers and electricians), email addresses, or numbers for a home fax machine (usual among self-employed people). And there is no provision for other user-definable data.

The contact manager divides information into clients and activities. The client data-sheet basically duplicates the information in the Phone Book module (name, address, home and business phone and fax numbers) with the addition of fields for personal salutation, suffix, title, and company name. You can automatically dial the phone number from within the Contact Manager module, too. Information is entered on a client data-card but is viewed in a list from which you can automatically dial your contact's phone number. You can move from Client List to the Client Activity window. An "activity" is the interaction with the contact. Interactions are something like a letter, fax, phone call, even a meeting and whatever you are planning to do next — this information must be entered manually. Unfortunately, you can't set alarms to remind you that a week has passed and it's time to write that follow-up letter.

There's a Quicken-like home finance and budgeting module, a useful home inventory which includes a form for entering insurance details and a module for recording home repairs. As well as this, you get a module for keeping tabs on your records, tapes, books and periodicals, a stock portfolio, a party and wedding planner, a club membership module and a conversion calculator, too.

The Alpha Software Corporation has recognised a (potentially) highly lucrative gap in the market but then left it to others to make a real killing with a more fully thought-out and integrated suite. The Home Suite is essentially a collection of pre-defined database modules. Aside from a front-end, there's no integration — you can't enter the details of a new music CD into your database and have the

### PCW Contacts

**Commence**

**Price** £199

**Contact** Now Distribution 0181 288 3512

**Good Points** High-end CM for standalone and network use.

**Bad Points** Overwhelming lists and a steep learning curve.

**Conclusion** A good, all-round contact manager, not as fully featured as GoldMine but with the distinct advantage of being a standalone CM as well as being networkable.

### PCW Contacts

**Complete Home Suite**

**Price** £35

**Contact** Alpha 01752 897100

**Good Points** Good price for simple needs.

**Bad Points** Lacks reminders and integration between modules.

**Conclusion** Alpha has identified, but failed to fill, a gap in the market. It's just a bunch of database modules.

*The eleven modules that make up the Complete Home Suite make for an innovative personal information manager*

home inventory module automatically updated, for instance. And there's too much missing: there's no diary or to-do maker, no link to a word processor and no module for recording birthdays and anniversaries. There's a desperate need to be able to set alarms and reminders.

## Ecco Professional

Ecco Professional was developed by Arabesque which was acquired in 1994 by NetManage, developer of the Chameleon Internet browser software, the leading provider of TCP/IP applications for Windows and one of the fastest growing companies in the US.

Despite a somewhat sluggish performance and the feeling that it was "initially tricky to get to grips with", Ecco Professional 2.0 won high praise and our Editor's Choice award in our PIM round-up back in October 1994. Performance has been improved with version 3.0 and there's been a small price reduction of about £50, which is good news.

Version 3.0 has over 100 new features including workgroup collaboration but NetManage, unsurprisingly, most actively touts Internet Integration: an Internet address book with over 2,000 pre-configured Gopher, World Wide Web and FTP sites. These are organised into more than 30 categories, and double clicking on any home page address stored in Ecco Pro 3.0 takes users directly to that home page — assuming they have set up Ecco Pro to link with NetManage Websurfer or some other Web browser.

Another new tool is Shooter. You can use this to send selected information from the Internet into Ecco, where it is stored along with its Internet address. Shooter links with yet another new feature, AutoAssign, an automatic information organiser. AutoAssign simplifies information management by automatically categorising information into specific Ecco folders based on a wide range of user-definable rules. When information is entered, Ecco checks the "rules" and if the conditions are met, the information is placed in the appropriate folders. When combined with Shooter, automating greatly simplifies the management of information sent from the Internet or any other Windows program. Users can shoot into Ecco from a Web Page and then AUTomating will automatically categorise it for them.

There is a new Correspondence Manager through which you can automatically send letters, faxes, email and letters to any number of contacts simultaneously, and a record of the correspondence is saved in the contact history. A new, and valuable, Time and Expenses module allows individuals and workgroups to track all expenses for any activity. This doesn't just mean out-of-pocket expenses for lunches or travel, but for projects too. You can set up billing codes and expense categories to fully track all expenses and calculate the billings for a particular client, or project, over a given time period.

There are new notepads for outlining all the details of every project and Ecco Pro 3.0 adds customisable colours, tabs to switch between views, revised menus and dialogues, icon balloon help, a print coach for sophisticated print layouts, as well as helpful hints throughout the program. It receives our Highly Commended award.

### PCW Contacts

**Ecco Professional**

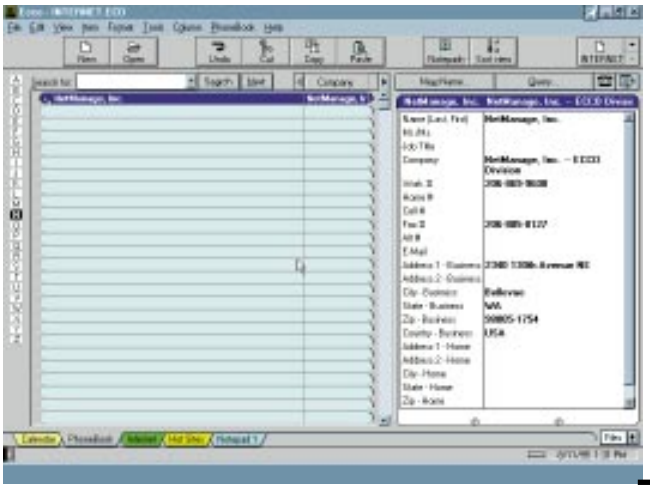
**Price** £129

**Contact** Roderick Manhattan 0181 875 4400

**Good Points** New tools enhance functionality. A good choice for anyone graduating from a PIM to a CM.

**Bad Points** Slightly idiosyncratic.

**Conclusion** A very good choice.



*Ecco's Internet Integration is a Net address book with over 2,000 pre-configured Gopher, WWW and FTP sites*

## GoldMine for Windows

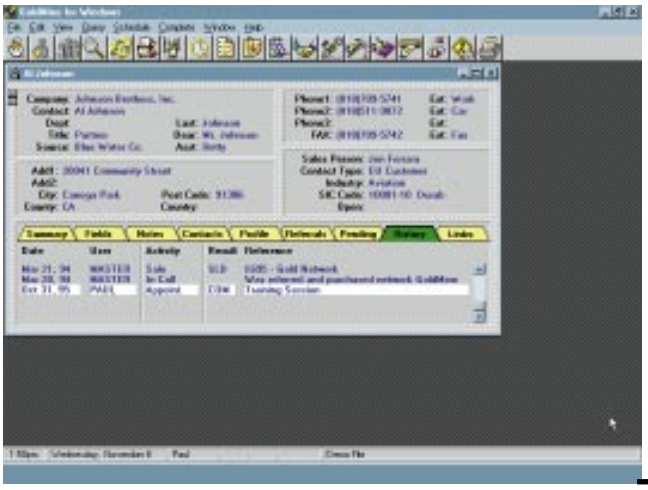
We said earlier that a PIM and a CM are not the same thing. If you really want to know the difference, GoldMine is it. There's little provision here for recording personal information. This is a heavyweight contacts database specifically designed for use on a network.

GoldMine for DOS was launched in the UK in 1992 and the Windows version hit the shelves in May 1994. It now has an installed base, worldwide, of 72,000 and for many well-known companies it is the contact manager of choice. In the October 1994 round-up we looked at version 2.5. This time we are looking at 2.5A. The "A" suffix means that we don't have a major upgrade here — what we *do* have is a fully anglicised version of GoldMine mainly distinguished by the incorporation of what the developer, Elan Software, calls "automated processes". This is a scripting language which searches for a predefined event and then automatically executes an action. For example, you could have GoldMine look for all customers not contacted within, say, the last three months and automatically generate an appropriate letter. These Automated Processes are similar to "Agents" in Commence and thus not wholly unique, but it certainly shows that Elan doesn't drag its feet when keeping its user base up-to-date with the latest labour-saving innovations.

If your business relies on your contacts it's doubtful that you need look far beyond GoldMine, though there is a steep learning curve to be climbed before you feel anything like pipe-and-slippers-at-home; which means you are looking at some staff training.

GoldMine uses a contact record card, underneath which is a series of tabbed dividers. A mouse click on one of these enables you to add or retrieve additional information about your contact. You can group contacts and associate salespeople with each group, and build lists using specified criteria. You can keep a complete history of interactions with the client, too.

There is a diary for managing your time. You can view by day, by week or by month, and it is possible to see the diaries of other users on the network as well. A good idea is the way that all activities in the diary additionally appear in list form so you can separate the



*GoldMine strikes it rich in the contact management stakes: truly powerful and on the cutting edge*

activities into lists of calls to make, appointments, things to do, and so on.

GoldMine comes with predefined links to Word and Ami Pro, but if you use another word processor you can set up links of your own. You can set up templates, too, for specific types of correspondence such as one thanking someone for enquiring about your product, or maybe even responding to a complaint. This is particularly valuable as it provides some control to ensure that your company responds correctly to the client's needs. You can also send faxes from within GoldMine.

It doubles as a statistics gatherer. You can use GoldMine to gather and collate data about such things as sales calls made, enquiries received, complaints dealt with and so on. The information can then be used in different ways, not least important being lead tracking.

GoldMine is feature rich and well thought out. A sister package, ColdSync, further enhances GoldMine's existing Remote Synchronisation facility, keeping on-the-road users up to date with changes at head office. In this respect the Windows 95 version, which is about to hit the streets as I write, includes interface enhancements, wizards, agents and Internet integration. This means that users can log on to the Net from within GoldMine 95 and synchronise databases via the Net, merging all changes down to the field level, including notes and history.

It all adds up to a contact manager without equal. If you are looking for a truly powerful package that stays on the cutting edge and has dedicated company backing, GoldMine can't be beaten. Unhesitatingly awarded the Editor's Choice of contact manager.

**PCW Contacts**

**GoldMine**

**Price** £395

**Contact** AVG Sales & Marketing 0171 454 1790

**Good Points** Not too user-specific. Fully featured. The 95 version has some smart tricks.

**Bad Points** Nothing immediately springs to mind.

**Conclusion** At the high end of the contact manager market, GoldMine emerges as a solid piece of software supported by a dedicated company with innovative ideas. All round it has to be a winner.

## InfoCentral 1.1

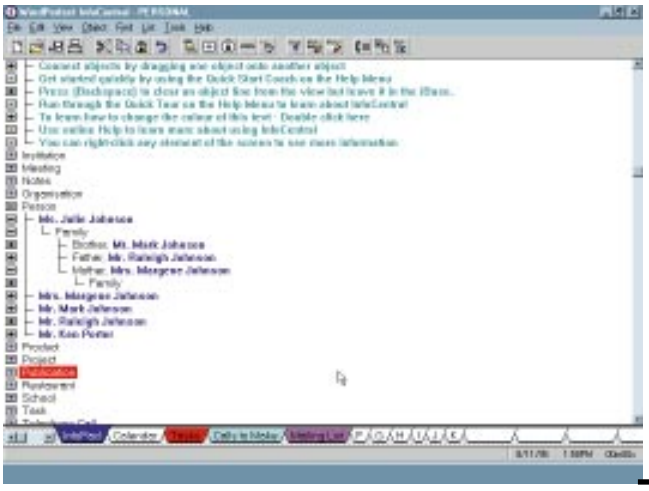
InfoCentral, which absorbs between five and 11Mb of hard disk space, is truly unique and is your best (probably only) choice if your business involves dealing with complex relationships. But be warned: InfoCentral at first seems so alien that you could easily be put off.

So, what's so special about InfoCentral? If you are familiar with an outliner, you'll have a basic idea of what InfoCentral looks like. It's rather like the directory structure in Windows File Manager where you have a directory name and next to it a button which, if clicked with a mouse, expands a list of sub-directories, some of which may in turn expand to reveal sub-sub-directories, which can in turn expand… and so on.

With InfoCentral, the directories, sub-directories and sub-sub-directories are called "objects". This is a piece of information you have defined. A name is an object and so, too, is an organisation, a job title, or whatever. InfoCentral isn't restricted to merely contact details, so you could have a directory called "Companies". The sub-directory would list each company with which you deal and each company would have a sub-directory called "People" which would list your contacts within that company. Then, each contact would have a sub-directory giving his job title, and so on.

The beauty of InfoCentral is that the sub-directories also become directories. In the above example you would have directories for Company, People, and Job Title. Thus, looking up a list of all the Marketing Directors with whom you deal would be simple. The real joy of InfoCentral is that it becomes a snip to locate complex interconnections between information. This isn't of significant value as regards contacts, where all the information you need might be best presented in a list, or on an index card, or found by searching for key words, but there are lots of ways in which it can be a boon. For instance, you might deal with somebody on the board of several companies or commissions: this fact may be buried under all kinds of weighty stuff in an ordinary contact manager, but in InfoCentral all such interconnections are made automatically.

You can use InfoCentral to keep track of your time and appointments and it additionally provides a neat and inexpensive way of keeping track of your documents. It will launch your word processor, automatically transfer addressee details to a new document and, when you've saved the document and exited back to InfoCentral, a record



*InfoCentral is truly unique, and is in a class of its own for handling complex relationships*

## PCW Contacts

### InfoCentral

**Price** £70
**Contact** Novell 01344 724000

**Good Points** Unbeatable for handling complex relationships. Inexpensive.
**Bad Points** Not ideal if you want speedy access to contact details.
**Conclusion** Clever, but not the nicest thing to look at or to use.

of the letter — dated, timed, and briefly described — will be listed under the contact name.

InfoCentral comes standalone or as part of the PerfectOffice suite. The former contains four pre-filled Information Bases, or iBases, which InfoCentral calls its databases. These are databases of computer companies, or other companies, travel and even wine. The PerfectOffice version only contains the travel iBase. The standalone version reviewed here also comes with a wide selection of templates for using InfoCentral to catalogue your video collection, and so on.

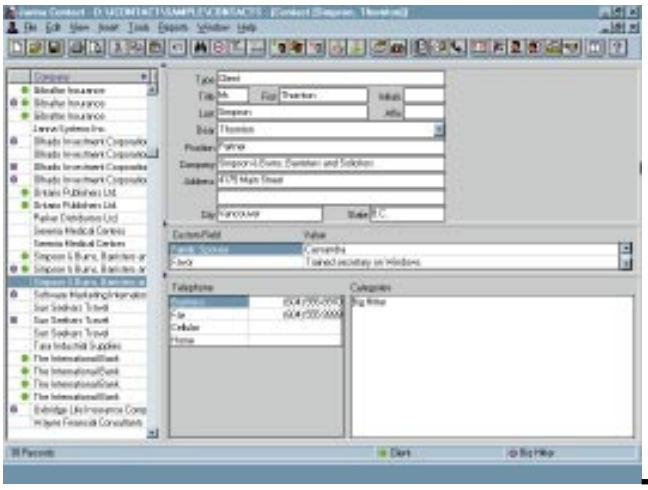
Version 1.1 has a new look and feel to the toolbar, but otherwise the improvements have been designed to satisfy the wishes of existing users rather than attract new ones. For example, you can now view all the appointments and meetings for which you have alarms pending. There's also new GroupWise Calendar Synchronisation.

InfoCentral is innovative, clever, and is designed for the computer rather than trying to emulate non-computer record keeping methods such as a file index card or telephone directory-type lists. There's nothing to touch it for dealing with complex relationships.

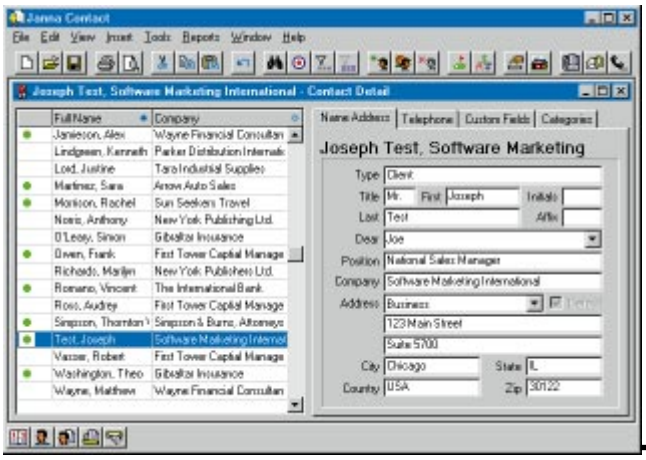
## Janna Contact 95 and Janna Contact 2.0

The minimum recommended specification for Janna Contact 95 is a 33MHz 486 with 8Mb of RAM. I don't expect software to run like lightning on a minimum spec machine — but I do expect it to run. Janna Contact 95 didn't run. It didn't even crawl. Tolstoy took less time to write *War and Peace* than Janna Contact 95 took to do anything. Corpses have been more animated.

I wondered whether my copy was a duff one so I telephoned the appropriate people who were disarmingly up front while at the same time trying to cover their rear: there was something about the minimum spec in the UK being 66MHz instead of the US version's 33MHz, but



*Janna 2.0 for Windows 3.1 is a very acceptable contact manager with some neat touches*




*Document handling is good in Janna 2.0*

the upshot is that being in a sweat to ship its 95 contact manager with Windows 95, Janna let go of a bum bit of software. Steps are being taken to rectify the situation, of course. The slowness is apparently caused by some of the code being written in Visual Basic. This is being sorted out right now and monthly upgrade disks are being issued. All should be OK by the time you read this but make sure you get the very latest version when you buy, not a box that's been on the shelf for a month or two.

In the meantime, while castigating Janna for being stupid with this product, its UK marketing person deserves a pay rise for being up front and successfully mollifying some of the more vitriolic comments caused by an afternoon wasted in trying to get the damn thing to work. Also for the speed with which they rushed out Janna Contact 2.0.

## PCW Contacts

### Janna Contact 95

**Price** £99.95
**Contact** Janna UK 01628 23453

**Good Points** Er, that's a bit tough because…
**Bad Points** ...it doesn't work.
**Conclusion** We found this a duff piece of software, but hopefully by the time you read this the problems will have been resolved. Nevertheless, a product not achieving the claims made for it should never have been released.

### Janna Contact 2.0

**Price** £99.95
**Contact** Janna UK 01628 23453

**Good Points** Performs all the standard CM tasks and simplifies data entry. Inexpensive.
**Bad Points** Not brilliant as a network tool.
**Conclusion** A good low-end contact manager. Worth considering, but at this stage the upgrade to '95 is in question and who knows but that you just might have to switch to another '95 package if Janna fails to rectify Janna 95's speed problems.

### Janna Contact 2.0

A complaining user in the Janna Forum on CompuServe complained that Janna 95 "runs like junk" even on his Pentium 133MHz with 13Mb of RAM and a 512Kb cache, but we shouldn't forget that Janna did manage to get its act together with Janna 2.0 for Windows 3.1. It's a very acceptable contact manager that handles all the common tasks and has some neat

touches. For instance, Janna 2.0 neatly handles companies with a number of outlets. When you come to add a new contact to, say, the Basingstoke branch of the MacHarris Burger chain, Janna pops up a list of all the MacHarris outlets you have in your database. You can then click the Basingstoke branch and Janna automatically fills in all the address and phone details.

There is almost no limit to the number of custom fields you can create in Janna, which is a strength it shares with the more heavyweight Maximizer. On a smaller scale than Maximizer, Janna 2.0 can be used to extract useful information from the raw database data.

Document handling is good. There are links to Word so that you can automatically insert address and other data into a letter or other document. You can run one of the supplied macros to link with WordPerfect and Ami Pro. There's lightweight network capability and group-scheduling. The diary could be improved, however.

Overall, reasonably quick to learn and simple to use, it has a number of powerful features but doesn't quite bring everything together in an equal whole. The price is a factor in assessing Janna 2, though: it is considerably less expensive than many contact managers, yet matches several in many areas with equal power. It might do exactly what you need and you could save enough to maybe buy a Psion 3A PDA for when you are away from your desk!

## Maximizer 3.0

Software that is too focused on a specific sector of the market is invariably too specialised for inclusion in a *PCW* group test such as this, and programs like Sage Telemagic, and Maximiser, may in future years come to be seen as specialist products.

### PCW Contacts

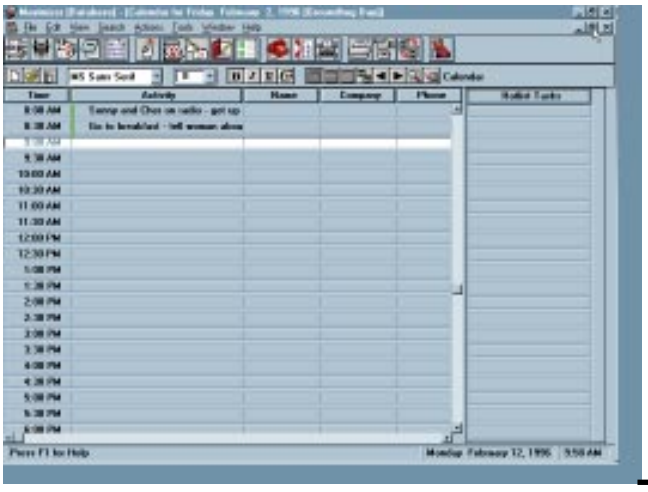
**Maximizer**
**Price** £395
**Contact** JI Software 01234 214004

**Good Points** Powerful and feature-rich.
**Bad Points** Too sales orientated for general use.
**Conclusion** For a sales force, this is *the* contact manager. Highly commended.

Maximizer is clearly targeted at sales: half-inch letters on the back of the box scream "Sell, Sell, Sell!" and below this is the statement that Maximizer is "the secret weapon of today's sales superstars". To ram home the purpose of Maximizer, the supplied documentation states that Maximizer has been "specifically designed for today's highly competitive selling climate". If ever there was one, Maximizer is a targeted piece of software. It is aimed solidly and uncompromisingly at sales managers and sales forces.

The first version of Maximizer was launched, in the US, for DOS in 1988. It took three years to reach Britain, where the DOS version was launched in 1991. A Windows version hit the pavements and sidewalks simultaneously in 1992. The following year the developers were acquired by Modatech Systems, a Canadian company heavily committed to sales systems and sales automation — which is another pointer to Maximizer's target market

In the UK, the program is distributed and supported by JI Software, which, stressing that it takes training to make the most effective use of Maximizer, operates a national consultancy service offering installation and individual or classroom training. From this you'll gather that we are handling a very sophisticated piece of weaponry in the armoury of contact management. In fact, Maximizer is the closest that off-the-shelf software gets to bespoke, and some user training is as inevitable as a Saville Row tailor requesting your presence for a fitting.



*Maximizer 3.0 is a glowing example of a contacts manager for the professional sales team*

The reason for this is the sheer number of contacts that Maximizer is designed to handle — anything up to tens of thousands! According to Modatech the card metaphor layout used by ACT!, for instance, actually slows a salesperson down when the database contains in excess of as few as 150 contacts. Maximizer therefore employs a system of lists, which is a faster and easier method of finding the information needed by the sales professional.

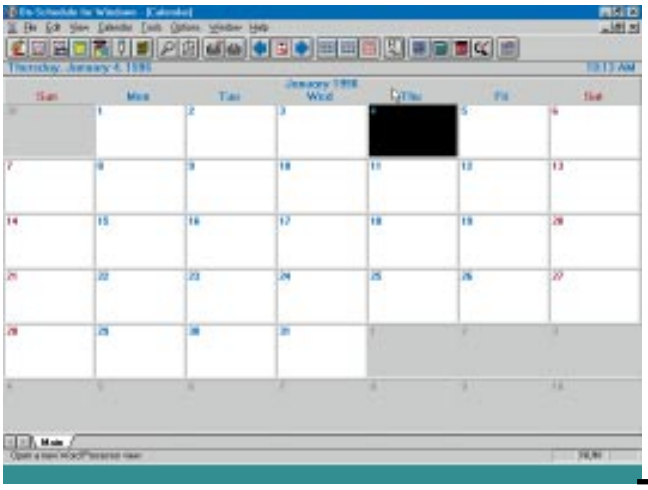
Version 3.0 has many new features, most of them small tweaks here and there such as a customisable toolbar, the introduction of a ribbonbar, and balloon help. There's OLE (Object Linking and Embedding) support, enabling users to attach an Excel spreadsheet or Word document to a contact sheet and edit that material from within Maximizer. The built-in word processor has been beefed up and now allows you to attach headers and footers, zoom, print preview and so on.

Maximizer is a brilliant contact manager, specifically designed for use by a professional sales team. It would be thoroughly deserving of our Editor's Choice but its narrow target market goes against it in this respect. Another consideration is that due to a recent parent company restructure, availability of the UK version of the product will be delayed by a couple of months. Maximizer nevertheless deserves a glowing, Highly Commended award.

## On-Schedule for Windows 2.0

There are two versions of On-Schedule: On-Schedule Express is a PIM, while On-Schedule for Windows is a beefed-up version of the former. The main benefits of the Windows version reviewed here are tracking of phone calls, enhanced mail/fax merge functions, integration with other applications, and comprehensive document management. Express doesn't have a phone log, word processor, or document manager. It isn't network ready, doesn't offer fax/mail merge or link to Word, WordPerfect and Ami Pro macros, and the number of databases you can open is limited to five, whereas with On-Schedule for Windows the number is unlimited.

As is clear from the above, On-Schedule is a low-end contact manager. By low-end, we mean that it isn't specifically aimed at a certain type of user such as a sales team, nor is it aimed



*On-Schedule is a contact manager for the rest of us. It's comfortable and has some nice touches*

## PCW Contacts

### On-Schedule

**Price** £99
**Contact** Prisma Office 01753 810899

**Good Points** Simple CM for anyone graduating from a PIM.
**Bad Points** Simple CM for anyone graduating from a PIM.
**Conclusion** A good choice for anyone with basic CM needs, but not the ideal contact manager for those with high-end needs.

especially at workgroups. In other words, On-Schedule is a contact manager for the rest of us — and with a £99 price tag and this kind of functionality, it could appeal to the pocket of a sensible power-user too.

In October 1994 we reviewed version 1.2. It came on two floppies and occupied a mere 2Mb of hard disk space. Version 2.0 comes on three floppies and is installed into 6Mb. Additional features make the space increase worthwhile.

First, a brief description of how On-Schedule does what it does. It displays contact information in lists, so your contact list initially looks like a row of columns in a spreadsheet or database. Clicking on one of the rows displays the contact's details. You can add notes and various reminders of follow-ups. A view called "Agenda View" displays just your appointments. You can also make to-do lists and On-Schedule for Windows has three additional views: Phone Logs keeps track of your calls when you either initiate or receive a call; Word Processor lets you create, save and edit documents; Document Manager allows you to keep track of external documents within On-Schedule.

On-Schedule comes close to InfoCentral in its ability to link data. Apart from letting you see all appointments and phone calls, a Links button lets you view the records of associated contacts. You have all the usual things such as automatic dialling and report generation, too.

On-Schedule 2.0 has a number of new features, mainly cosmetic. In Phone Books you can keep track of callbacks and birthdays. You can view multiple calendars at the same time, use drag and drop to move or copy activities between calendars, and particularly valuable, you can schedule activities not requiring a specific time. The internal word processor supports BMP, PCX, GIF, TIF, TGA and WMF picture formats, you can incorporate headers and footers, and there are multiple levels of Undo. Additionally, you can now simply select your contact from the menu, click on the Write Letter and have On-Schedule open your word processor and insert the addressee's details.

Anyone considering a PIM but requiring CM features, without the hassle associated with some of the high-powered packages, would do well to consider On-Schedule for Windows. It's comfortable to work with and has some nice touches.

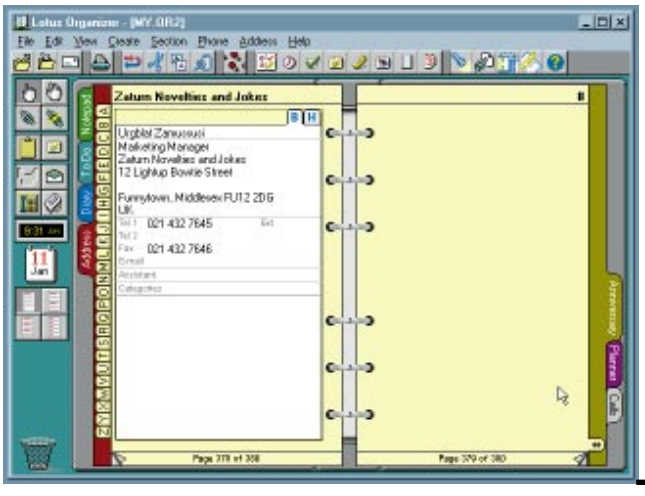
### Organizer

Organizer is a PIM — probably the best PIM you can get. The trouble is, Lotus is trying to turn Organizer into a Contact Manager. It will never successfully make the transition and thus we currently have Lotus trying to turn the very best sow's ear into what will inevitably be an inferior silk purse.

We say this because Organizer was designed to be a personal information manager with the emphasis on *personal*. It's based on the popular Filofax and appears on screen as a ring binder with coloured dividers separating the Notepad, To-Do list, Diary, Address Book, Anniversary List and Planner. Moreover, it will even print pages to fit your Filofax. These modules integrate seamlessly and there are some neat ways of making interconnections: for instance, you can make an entry on the notepad and link it to a contact in the address book.

The familiar look and feel make Organizer probably one of the easiest personal information managers with which to get started. Contact information is entered on a representation of a paper page. You have a box for the contact's first name, one for their last name, another for their position within the company, the company name, and the address — which is sensibly in one field. Organizer can accommodate unusually long addresses (such as those with house names) and doesn't restrict you to two address fields.

There is a separate field for postcode, fax and phone numbers, and an extension number. You can also assign a category to each contact (such as personal or business) or separate your customers from those to whom you give business.




*Organizer is the best PIM around. It's a shame Lotus is trying to turn it into an inferior contact manager*

## PCW Contacts

### Organizer

**Price** £99
**Contact** Lotus 01784 255445

**Good Points** An easy to use, well-designed PIM.
**Bad Points** Lotus is trying to make it a CM when it's not one.
**Conclusion** The very best sow's ear being turned into an inferior silk purse. Beaten hands down by Sidekick 95, but not tough enough to rough-house it with the contact managers.

If you want to get some organisation into your life and your business you need either a Personal Information Manager (PIM) or a Contact Manager (CM). PIMs and contact managers are often thought to be more or less the same thing. Even some companies don't fully make the distinction, but there is a very real difference between the two.

In it's truest sense a PIM is an electronic address book, a diary, and the back of an old envelope — that is, a PIM is a place for storing names, addresses and phone numbers, for noting appointments and making a list of things to do. A PIM can also be a place to record birthdays and anniversaries, store the type of information you may like to have ready to hand such as price lists, train times and notes of your expenses. The operative word is "personal"; a PIM contains information about you, the user.

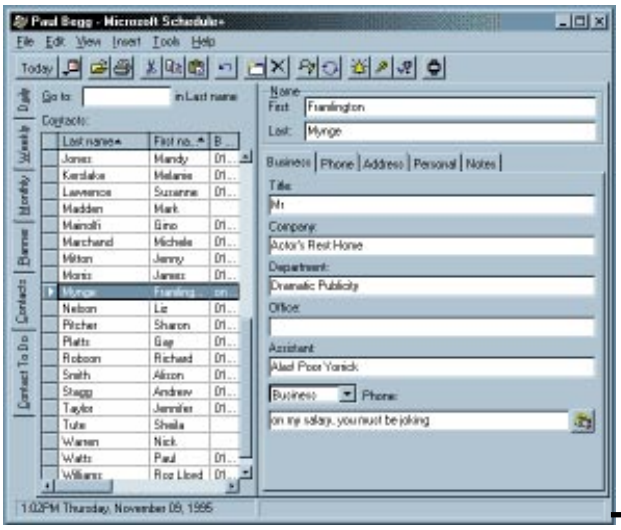
A contact manager isn't about you. It's about those with whom you interact, which generally means people with whom you do business. It lets you record the usual address details, but may also allow you to store such things as your contact's spouse's and children's names. It keeps a history of all your dealings with that client, too. The next time you see a client you'd be able to walk into his office and say something like: "Hello, Mr James. How were those two weeks in the Dominican Republic? Did Mary like it? I bet Daniel and George loved those warm seas. Now when we spoke last, in March, on the 25th wasn't it?…"

## PCW Contacts

### Schedule+

**Price** £79 (Windows 95 version)
**Contact** Microsoft 01734 270000

**Good Points** Good, basic, address database and time management.
**Bad Points** None. It is a basic address book and diary and performs those tasks well. If you want more, look elsewhere.
**Conclusion** It integrates perfectly with Microsoft Office and may satisfy all your needs.




*Looks familiar? Yes and no. The upgrade of Schedule+ for Windows 95 has been substantial, and there are many improvements*

More powerful Contact Managers should also let you know when to contact clients, when to bill them, send them reminders, and so on. And ideally it should have some kind of scheduling feature as well so you can schedule meetings, visits, and assorted other appointments. While at the heavyweight end it should be highly networkable and offer group scheduling, resource management and email. Remote file synchronisation — keeping the contact database of the on-the-road mobile user up-to-date with the latest information at the office — is another important plus of a fully-featured CM.

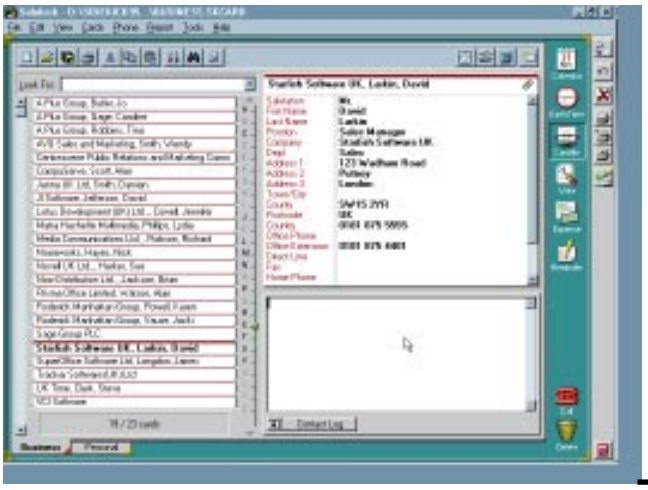
A PIM, therefore, is about you, whereas a contact manager is focused on your clients. The difference isn't quite that simple though — things never are! Developers have begun isolating and targeting sectors of the market and some of the software packages have become fairly specialised. For instance, Alpha Software has launched The Complete Home Suite, reviewed here, which no doubt is the first of many PIMs designed for the home user. Then there are the PIMs such as Sidekick which are intended for the SOHO (Small Office/Home Office) user, and PIMs like Organizer that attempt to bridge the divide and become a low-end contact manager. And contact managers themselves seem to be dividing into those designed for office-based sales teams and those for a sales force on the road: some aren't even for a sales force at all, and others aren't really CMs but specialist contact databases which store contact data and output it by almost any criteria you can imagine. These programs are not designed to keep you in touch with your contacts but for you to extract statistical data such as; how many contacts you have in a specific postal code, or those who share the same surname, and so on.

Deciding whether you want a PIM or a CM, or something that tries to combine the basic tools of both, depends on your needs and this is one software category where practically every package does its job differently. The best advice we can give is: decide in advance what you want your PIM or CM to do, then try to get a demonstration of those packages, described here, that seem to fit the bill.

### ACT! for Windows 2.0

Contact management, as distinct from personal information management, was almost invented by a company called Contact Software International when it launched ACT! for DOS in the antediluvian mists of 1987. Over the years the program blossomed and contact management turned into a BIG software category. Then, in 1993, Contact Software International was bought by Symantec, a company then best known for its Q&A database and today for Norton Utilities. Since acquiring ACT!, Symantec has done practically nothing with it.

We first reviewed ACT! 2.0 back in July 1994 and in our last PIM Group Test in October 1994, when it was awarded the Editor's Choice. We observed in the July review that ACT! 2.0 was a minor upgrade; no more than a few tweaks here and there with some enhancements necessary to bring it into line with the competition. This mainly included network and integrated email support. Now, round about 18 months later, we find that Symantec has still done nothing to ACT! and that ACT! for Windows 2.0 is the current version — but remarkably, ACT! remains a solid contact manager



*Despite a few rough edges here and there, Sidekick is everything a PIM should be*

**PCW Contacts**

**Sidekick**

**Price** £39

**Contact** Roderick Manhattan 0181 875 4400

**Good Points** Superb, brilliant PIM. You won't be disappointed.

**Bad Points** Some slight rough edges.

**Conclusion** Despite its deficiencies, Sidekick is currently the best PIM.

and a strong contender for the Editor's Choice award.

ACT! is one of the easiest of the high-end contact managers to use mainly because all contact details are contained on a double-sided file card. Each contact card has about 70 fields for contact and company name, address, phone and fax numbers, plus assorted other details. Additionally, there's a host of user-definable fields for other information you'd like to include, such as nicknames, spouse names and such like.

Once the database has been set up, you can keep a record of all those "to-do" and "done" tasks associated with each contact. Once the to-do has been done, the details are automatically transferred to the contact's history file and stamped with the date and time.

There's an integrated word processor that although basic, is likely to satisfy letter-writing needs (which is all it's intended to do). ACT! will also insert address details into a letter or fax (you can fax from within ACT!) and there's all the usual stuff for setting alarms and producing contact reports.

ACT! is weak when scheduling appointments: these can only be scheduled at 15-minute intervals and two tasks cannot be scheduled for the same time; this is a hindrance if you want to meet more than one person within those 15 minutes, or want to schedule two appointments for the same time. There's no provision for entering timeless events either. And, ACT! lacks an expense account module (present in the old DOS version), which would otherwise be useful for mobile sales staff.

There's a separate package called ACT! Mobile Link which merges contact, history, and activity information from mobile salespeople into a central ACT! database. When the central database is changed, the information can be sent via Mobile Link to the appropriate salespeople.

There are other features, too. For example, the Electronic Literature Rack is where the sales manager can store price sheets, sales literature, and so on. These can be downloaded via Mobile Link by a salesperson, who will thus be assured of having the most up-to-date information. In addition there's a version of ACT! specially designed for the Psion 3a (see *PDA — Another little helper* on page xx).

It's remarkable that ACT can hold its own against all-comers and be a serious contender for our Editor's Choice award even though it hasn't undergone any kind of serious upgrade since version 1.0. One cannot seriously doubt that Symantec is committed to ACT! and we are conscious of the maxim "if it ain't broke, don't fix it", so there is no hard case for penalising this mature and robust product simply because Symantec hasn't released the sort of penny-ante upgrade about which some companies try to make a brouhaha. In the final analysis, however, one can't ignore the fact that in the high-end contact management stakes, ACT! is falling behind by a few furlongs.

## Commence 3.0

Commence has a reasonable pedigree. It was developed by New Jersey-based Jensen-Jones and under the name "Current", was adopted by IBM. The name was changed to "Commence" when the product was re-acquired by Jensen-Jones.

If Commence has a great strength it lies in trying to be all things to all people. Unsurprisingly, this is also a weakness, though in this case not a particularly great one. Commence attempts to be a personal information manager and a contact manager and a standalone package, as well as one for network users. The result is a package that does pretty much everything but has a very steep learning curve. On the plus side, it has been reduced in price by about £100 since we reviewed version 2.1 in October 1994.

All information in Commence is in list

**PCW Contacts**

**SuperOffice**

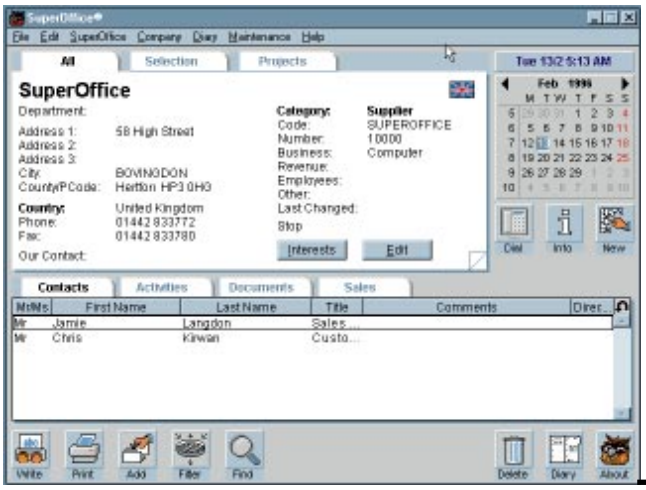
**Price** £249

**Contact** SuperOffice Software 01442 871119

**Good Points** Easy to use.

**Bad Points** Messy, poor configurability, insane price.

**Conclusion** Messy, poor configurability, insane price.




*SuperOffice is a PIM that tries to be a contact manager and succeeds at neither. Matching the features against the price hike just doesn't add up*

form which can seem overwhelming when you start the program, and there is a seemingly endless series of dialogue boxes open which list all your contacts, all your appointments, all your to-do's, all your… well, you get the idea. Connecting the data could be a nightmare, but Commence has particularly strong search capabilities which in fact make it fairly easy to find the information you want. You can search for a specified piece of text in all or any of the data lists.

All addresses are contained alphabetically in a ring organiser, similar to a paper-based organiser or the Filofax-look of Lotus Organizer. The entry contains basic information such as telephone numbers. Clicking on the contact name brings up a data card with additional information.

A core feature of Commence (though by no means unique to the program) is Agents, a kind of computerised Pavlov's dog responding to a stimulus, here called a "Trigger Event". Instead of merely salivating, Agents responds to the trigger by performing a function such as automatically re-invoicing a client whose account is overdue. Commence is supplied with some pre-configured agents, and version 3.0 includes some new ones, but it's easy to configure your own.

Commence is flexible and has a considerable amount of integration. There are good printing options, report generation, and you can synchronise data with a laptop PC.

Version 3.0 has a number of new features which add to its strength. Data entry has been speeded up with the inclusion of Plus buttons on View Bar: down the left-hand side of the screen are several buttons which launch different modules. One of these buttons is now marked with a plus (+) sign and clicking on this lets you add data directly to the appropriate category. In other words, you can add a new contact to the address book without opening the address book module. There's also a full compliment of diary views by: one day, two days, a week, two weeks, a month, and six weeks. Another new feature is support for Delrina WinFax 4.0, which can now use Commence as a phone book.

## The Complete Home Suite

The Complete Home Suite is an innovative personal information manager. Not only does it have a basic address book and contact manager, but there are also modules for keeping track of other personal details such as finances, possessions and repairs and renovations you may have made to your home. There are 11 modules altogether.

The software, which runs under Windows 95 as well as 3.1 and comes on CD-ROM or two floppies, has been fully anglicised: US zip code has been changed to postal code, US state has been altered to county, and so forth.

Perhaps the most important modules here are the Phone Book and the Contact Manager. The Phone Book is a basic card index: one card per person, each card containing fields for address details, home and work phone and fax numbers. There's an area for making free text notes as well as a button to get your computer to dial the phone number for you. Although this is good enough for basic address book information it's not much good if you want to include cellular phone numbers (now very common with tradesmen such as plumbers and electricians), email addresses, or numbers for a home fax machine (usual amongst self-employed people). And there is no provision for other user definable data.

The contact manager divides information into clients and activities. The client data-sheet basically duplicates the information in the Phone Book module (name, address, home and business phone and fax numbers) with the addition of fields for personal salutation, suffix, title, and company name. You can automatically dial the phone number from within the Contact Manager module, too. Information is entered on a client data-card but is viewed in a list from which you can automatically dial your contact's phone number. You can move from Client List to the Client Activity window. An "activity" is the interaction with the contact. Interactions are something like a letter, fax, phone call, even a meeting and whatever you are planning to do next — this information must be entered

### PCW Contacts

**TeleMagic Professional for Windows**

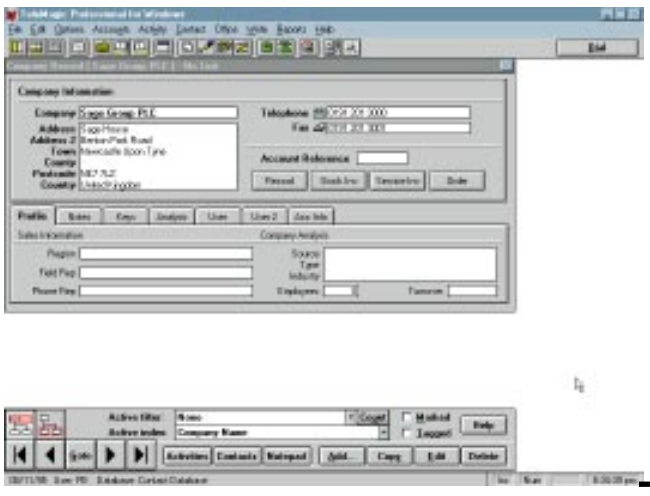
**Price** £595

**Contact** Sage 0191 201 3000

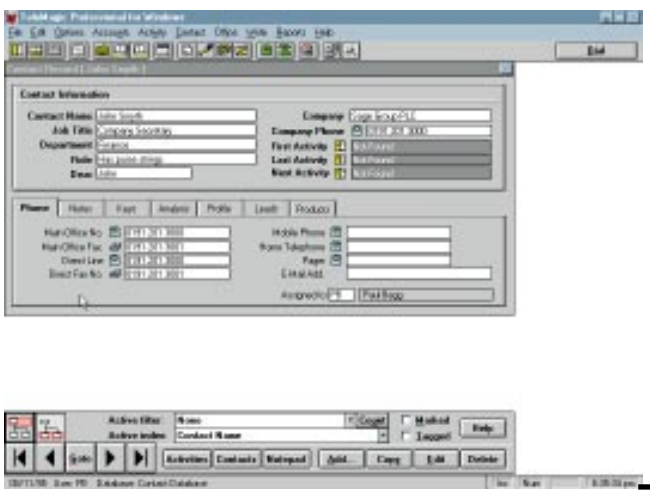
**Good Points** Powerful.

**Bad Points** Sales focused and highly priced.

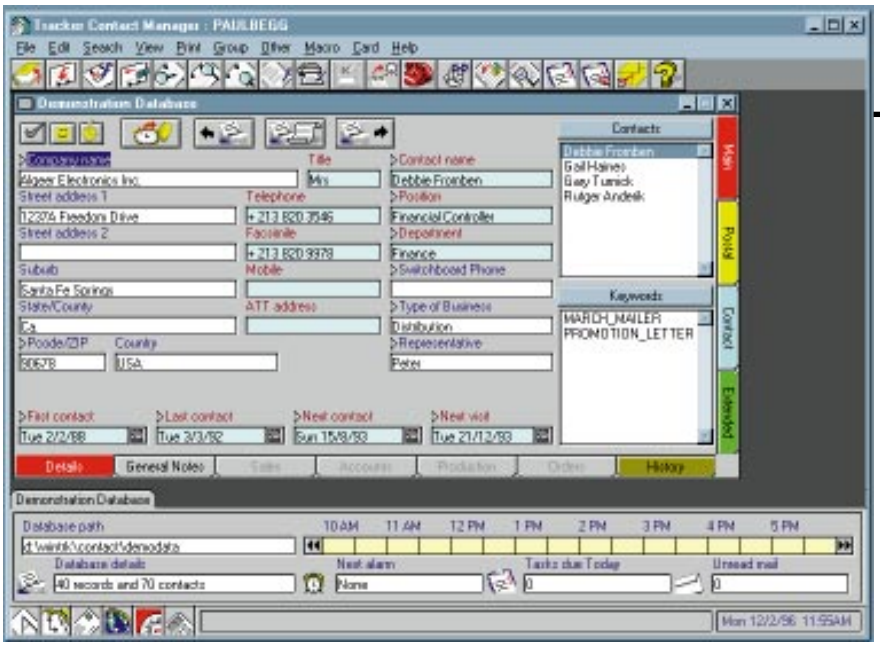
**Conclusion** Far and away too expensive, but blends with other Sage products.



*TeleMagic Professional for Windows is geared towards telesales*



*Impressive, but highly priced and rather slow in use. TeleMagic ProIWin is not a package that will attract very broad appeal*




*With its ease of use and combined PIM features with high-end contact tracking, Tracker is a highly commended package*

manually. Unfortunately, you can't set alarms to remind you that a week has passed and it's time to write that follow-up letter.

There's a Quicken-like home finance and budgeting module, a useful home inventory which includes a form for entering insurance details and a module for recording home repairs. As well as this, you get a module for keeping tabs on your records, tapes, books and periodicals, a stock portfolio, a party and wedding planner, a club membership module and a conversion calculator, too.

The Alpha Software Corporation has recognised a, potentially, highly lucrative gap in the market but then left it to others to make a real killing with a more fully thought-out and integrated suite. The Home Suite is essentially a collection of pre-defined database modules. Aside from a front end, there's no integration — you can't enter the details of a new music CD into your database and have the home inventory module automatically updated, for instance. And there's too much missing: there's no diary or to-do maker, no link to a word processor and no module for recording birthdays and anniversaries. There's a desperate need to be able to set alarms and reminders.

## Ecco Professional

Ecco Professional was developed by Arabesque which was acquired in 1994 by NetManage, developer of the Chameleon Internet browser software, the leading provider of TCP/IP applications for Windows and one of the fastest growing companies in the US.

Despite a somewhat sluggish performance and the feeling that it was "initially tricky to get to grips with", ECCO Professional 2.0 won high praise and our Editor's Choice award in our PIM roundup back in October 1994. Performance has been improved with version 3.0 and there's been a small price reduction of about £50, which is good news.

Version 3.0 has over 100 new features including workgroup collaboration but NetManage, unsurprisingly, most actively touts Internet Integration: an Internet address book with over 2,000 pre-configured Gopher, World Wide Web and FTP sites. These are organised into more than 30 categories, and double clicking on any home page address stored in Ecco Pro 3.0 takes users directly to that home page — assuming they have set up ECCO Pro to link with NetManage Websurfer or some other web browser.

Another new tool is Shooter. You can use this to send selected information from the Internet into ECCO, where it is stored along with its Internet address. Shooter links with yet another new feature, AutoAssign, which is an automatic information organiser. AutoAssign simplifies information management by automatically categorising information into specific ECCO folders based on a wide range of user-definable rules. When information is entered, ECCO checks the "rules" and if the conditions are met, the information is placed in the appropriate folders. When combined with Shooter, automating greatly simplifies the management of information sent from the Internet or any other Windows program.

Users can shoot into ECCO from a Web Page and then AUTomating will automatically categorise it for them.

There is a new Correspondence Manager, through which you can automatically send letters, faxes, email and letters to any number of contacts simultaneously, and a record of the correspondence is saved in the contact history. A new, and valuable, Time and Expenses module allows individuals and workgroups to track all expenses for any activity. This doesn't just mean out of pocket expenses for lunches or travel, but for projects too. You can set up billing codes and expense categories to fully track all expenses and calculate the billings for a particular client, or project, over a given time period.

There are new notepads for outlining all the details of every project and Ecco Pro 3.0 adds customisable colours, tabs to switch between views, revised menus and dialogues, icon balloon help, a print coach for sophisticated print layouts, as well as helpful hints throughout the program. It receives our Highly Commended award.

## Goldmine for Windows

We said earlier that a PIM and a CM are not the same thing — if you really want to know the difference, GoldMine is it. There's little provision here for recording personal information. This is a heavyweight contacts database specifically designed for use on a network.

GoldMine for DOS was launched in the UK in 1992 and the Windows version hit the shelves in May 1994. It now has an installed base, worldwide, of 72,000 and for many well-known companies it is the contact manager of choice. In the October 1994 roundup we looked at version 2.5. This time we are looking at 2.5A. The "A" suffix means that we don't have a major upgrade here — what we

### PCW Contacts

**Tracker**

**Price** £249

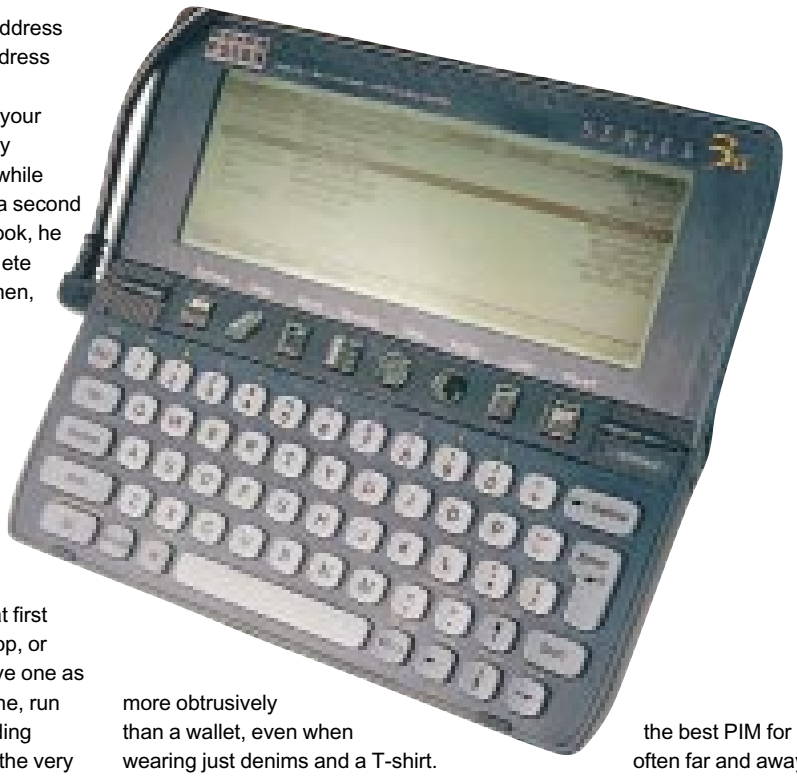
Contact Tracker Software 01628 488866

**Good Points** Combined high-end contact management with PIM features in a simple card index.

**Bad Points** Nothing to speak of.

**Conclusion** Has taken over from ACT! as a good all-round contact database. Highly commended.

## Power in your pocket — the personal digital assistant



**A** PIM is essentially a glorified address book and diary. But unlike an address book, which is easily mislaid, a computerised version is safe on your computer, on your desk. The only disadvantage, of course, is that while some degenerate wouldn't give a second glance to an ordinary address book, he might nick your computer, complete with all that essential data. But then, the trouble with a PIM on your desktop is that when you move away from your desk you don't have access to all those addresses and phone numbers.

A paper-based address book really isn't the answer — you'd have to keep it up to date, which you'll never do because nobody ever does. The most sensible solution, at least at first glance, would seem to be a laptop, or notebook computer: you can have one as powerful as your desktop machine, run every desktop application, including multimedia, and have access to the very same database of names and addresses as you have in the office. Moreover, with remote synchronisation you can be as up-to-date away from your desk as when you are sitting at it. But the trouble with a laptop in your briefcase is that even the most featherweight machine can feel like all the lead from the roof of St Paul's Cathedral after you've been lugging it around for half an hour. And, naturally, the batteries will run out just when you need it most. Have you ever stood in a phone booth in the pouring rain, fumbling to start up your notebook, open the application, find the phone number, dial it, shut everything down, and then find that when the phone is answered your contact has gone to the loo and can you call back in five minutes? Have you ever done it in a rough neighbourhood in front of some men whose hobby is no doubt GBH and are clearly wondering what the notebook would fetch from the local fence?

### The user's little helper

What you really need is something small and light enough to carry in your pocket, quick to operate and which is discreet, so that using it attracts no more attention than yet another Status Quo comeback.

The answer is an electronic organiser. You can buy one that's no bigger than a small calculator and can be carried no more obtrusively than a wallet, even when wearing just denims and a T-shirt. And it needn't set you back more than £20. Even the tiniest of these allows you to enter home and office phone numbers, short diary notes, schedule appointments, birthdays and anniversaries, and provide the time and date. The database won't be huge, so you'll have to be selective with the phone numbers you enter, but if you are only occasionally away from your desk and need only a few contact numbers, it's a better storage solution than a jumble of numbers jotted down on a bit of scrap paper — it won't give you a hernia either.

### Psion 3a

The upmarket version of the pocket electronic organiser described above is a PDA (Personal Digital Assistant) like the Psion 3a, which is probably the most popular in Europe and the best thing since sliced Hovis. It combines an address database of several hundred contacts (maybe even in excess of a thousand would be possible), with a word processor (on which you can actually work!), a spreadsheet, appointments calendar, and some other stuff such as a game. And you can link it to your desktop computer to keep it up-to-date and save a lot of time re-entering the data. The Psion Series 3a also has software specially designed for it which adds to its functionality. For example, you can get ACT! and even a version of the brilliant AutoRoute Express. Far and away the best PIM for anyone who's often far and away from their desk.

### Timex DataLink Watch

If you don't really need more than about 50 or so contact telephone numbers and don't want to run the risk of losing your Psion or notebook, maybe you should consider the Timex DataLink Watch. Provided you have Windows 3.1 and the relevant software, all you have to do is hold your watch in front of your computer monitor. The screen will flash for a few seconds as the watch's so-called electronic eye captures the data from your screen. You can record almost anything, from phone numbers to your PIN numbers. The watch will remind you, too, of birthdays and anniversaries, meetings and appointments. In fact, you'll know your schedule like the back of your hand.

The Timex DataLink is now also fully integrated in Microsoft Office 95 (see our Schedule+ review on page 197).

### PCW Contacts

**Psion**
**Price** Psion 3a 1Mb, £339.95;
Psion 3a 2Mb, £399.95
**Contact** Psion 0171 258 7368;
Fax 0171 258 7242

**Timex DataLink**
**Price** £119 (RRP)
**Contact** UK Time 0171 630 8180;
Fax 0171 931 7498

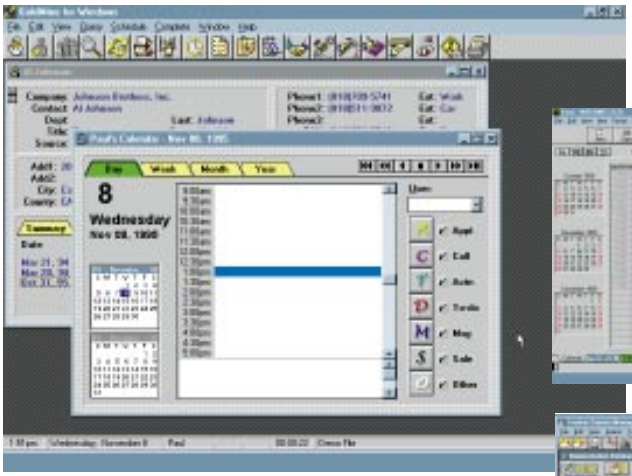
## Editor's Choice

Bestowing a best of group award in this category of software is practically impossible. A very basic contact manager such as that contained in The Complete Home Suite simply doesn't bear comparison with a high-end connect manager such as GoldMine, but this needn't mean that the former is to be found lacking. Indeed, it could very likely handle all the home user's needs and the GoldMine people themselves would be the first to say that GoldMine for a home user would be overkilling over-kill. Both set out to satisfy a different sector of the market — which is actually the big problem here.

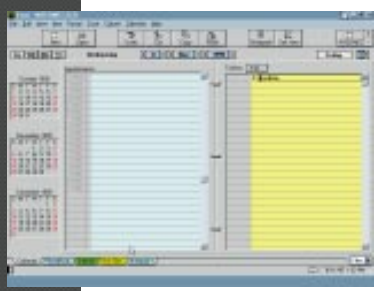
Back in 1994, we separated PIMs from contact managers and bestowed an Editor's Choice on a product in both categories. We have done the same this year, but with a deep sense of having been somewhat unfair. The reason being that some products are increasingly aimed at a specialist market.

There are large numbers of CM users who are not directly involved in sales. A customer complaints department, for example, or an appliance servicing business. But even within the selling category there are quite distinct divisions, each being targeted by software. There is, for example, the sales rep in his car outside a customer's business premises who merely wants to gen up on his customer's personal details and what he ordered during the previous visit. What he wants is all the information on a single card-file and ACT! or Tracker would satisfy his needs. A complex product like Maximizer would be next to useless. On the other hand, a corporate user wanting to extract meaningful information from raw contact data would probably find ACT! too limited but Maximizer to be the bee's knees.

So we have looked at these products from the point of view of their appeal to users across the board. Maybe next year this software category will have to be further sub-divided and the software assessed according to how it handles specialist needs. For now though, we reckon that users as a whole will find the following to be the best buys.

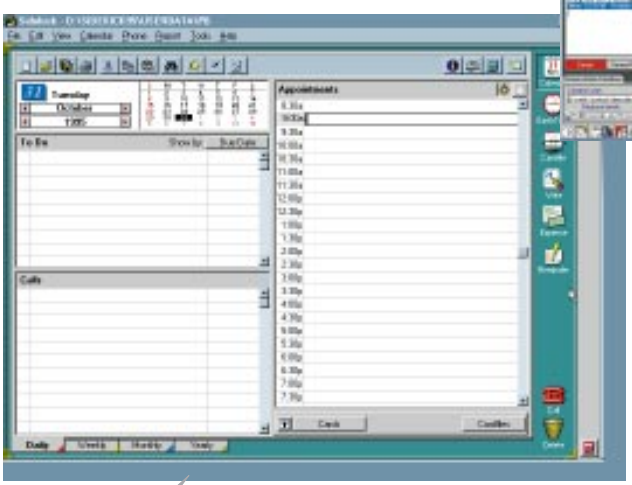


Goldmine



Ecco

Tracker



Sidekick

### PIMs

The best PIM wasn't a difficult choice. We thought The Complete Home Suite was innovative, but didn't like the lack of integration between the modules. Lotus Organizer remains extremely easy to use and powerful but Lotus has spoiled it by trying, against logic and reason, to turn it into a contact manager. So, inside this year's golden envelope for Editor's Choice of PIM and with an emotional voice about to thank mum, dad, the director, producer, the developers and Phillipe Kahn is Sidekick 95 — it's the best you can get.

Having to look modest and happy for Sidekick, but really seething inside for having to walk away with the only slightly less prestigious Highly Commended award, is Ecco Professional 3.0, which, though it strays quite a distance into the contact management field, remains a "me" program more than a "them" program.

### Contact Manager

Turning to the contact managers, a Kleenex for dabbing away the tears of joy must be passed to GoldMine for Windows — our Editor's Choice of CM. In the immortal words of Tina Turner, it's "simply the best, better than all the rest". It is less specialised than Maximizer and more powerful than Commence. It's supported by a dedicated team of developers and, above all, use of the Internet is an exciting element of its Windows 95 debut.

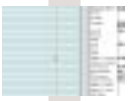
Highly Commended awards for a contact manager go to Maximizer (unbeatable as a highly specialised, sales-orientated contact database) and to Tracker, which is a more broadly-based product and justifiably deserves to share the award.

## TABLE OF FEATURES

| Product | ACT! for Windows | Commence | Complete Home Suite | Ecco Professional | Goldmine for Windows | InfoCentral | Janna Contact | Janna Contact 95 |
|---|---|---|---|---|---|---|---|---|
| Version reviews | 2.0 | 3.0 | 1.0 | 3 | 2.5a | 1.1 | 2.0 | |
| 95 version expected | not known | mid-96 | no immediate plans | 1st quarter 96 | now | unknown | now | n/a |
| Author | Symantec | Jensen-Jones | Alpha | NetManage | Elan Software | Novell | Janna Systems | Janna Systems |
| Supplier | Symantec | Now Distribution | Alpha | Roderick Manhattan | AVG Sales and Marketing | Novell | Janna UK | Janna UK |
| Phone | 01628 59222 | 0181 288 3512 | 01752 897100 | 0181 875 4400 | 0171 454 1790 | 01344 724000 | 01628 23453 | 01628 23453 |
| Fax | 01628 592393 | 0181 288 3514 | 01752 894833 | 0181 877 1388 | 0171 345 9126 | 01344 724010 | 01628 33220 | 01628 33220 |
| Price | £189 inc | £199 | £35 | £129 | £395 ex VAT | £70 | £99.95 ex VAT | £99.95 ex VAT |
| Type: PIM or CM | CM | CM | PIM | CM | CM | PIM | CM | CM |
| Hard Disk | 5Mb | 7Mb | 14Mb | 11 | 6Mb | 8Mb | 8Mb | 12Mb |
| Memory | 4Mb | 2Mb | 8Mb | 8 | 8Mb | 4Mb | 8Mb | 12Mb |
| Diary | ● | ● | ❍ | ● | ● | ❍ | ❍ | ● |
| Address Book | ● | ● | ● | ● | ● | ● | ● | ● |
| To-Do List | ● | ● | ❍ | ● | ● | ● | ● | ● |
| Word Processor/Notepad | Word Processor | ❍ | notes | notes | ❍ | ❍ | notes | notes |
| Auto-Dial | ● | ● | ● | ● | ● | ● | ● | ● |
| Call-logging | ❍ | ● | ● | ● | ● | ❍ | ● | ● |
| Document Management | ❍ | ❍ | ❍ | ❍ | ● | ● | ● | ● |
| Workgroup Scheduling | ● | From £545 | ❍ | ● | ● | ❍ | ● | ● |
| Data Synchronisation | ● with ACT! Mobile Link | ● | ❍ | ● | ● | ❍ | with Janna Remote | ● |

KEY ● Yes ❍ No



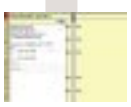


## TABLE OF FEATURES

| Product | Maximizer | On-Schedule | Organizer | Schedule+ | Sidekick 95 | SuperOffice | TeleMagic | Tracker |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Professional for Windows | |
| Version reviews | 3.0 | 2.0 | 2.1 | 7 | | 3 | 1.0 | 2.0 |
| 95 version expected | now | Dec-99 | 1996 | n/a | n/a | 1st/2nd q 96 | yes | 1 HALF OF 96 |
| Author | Modatech Systems | Odyssey Computing | Lotus | Microsoft | Starfish UK | SuperOffice Software | Sage | Tracker Software |
| Supplier | JI Software | Prisma Office Ltd | Lotus | Microsoft | Roderick Manhattan | SuperOffice Software | Sage | Tracker Software |
| Phone | 01234 214004 | 01753 810899 | 01784 255445 | 01734 270000 | 0181 875 4400 | 01442 871119 | 0191 201 3000 | 01628 488866 |
| Fax | 01234 215374 | 01753 810903 | 01784 445618 | 01734 270002 | 0181 877 1388 | 01442 873339 | 0191 201 0308 | 01628 488855 |
| Price | £395 | £99 ex vat | £99 | £ 79 | £39 | £249 | £595 + VAT | £249 ex VAT |
| Type: PIM or CM | CM | CM | PIM with pretensions | PIM | PIM | CM | CM | CM |
| Hard Disk | 8Mb | 3Mb | 10Mb | | 5Mb | 6Mb | 10Mb | 10Mb |
| Memory | 4Mb | 4Mb | 6Mb | | 8Mb | 6Mb | 8Mb | 4Mb |
| Diary | ● | ● | ● | ● | ● | ● | ● | ● |
| Address Book | ● | ● | ● | ● | ● | ● | ● | ● |
| To-Do List | ● | ● | ● | ● | ● | ● | ● | ● |
| Word Processor/Notepad | both | Word Processor | notes | ❍ | Word Processor | ❍ | notes | Word Processor |
| Auto-Dial | ● | ● | ● | ● | ● | ● | ● | ● |
| Call-logging | ● | ● | ● | ● | ● | ● | ● | ● |
| Document Management | ● | ● | ❍ | ❍ | ● | ● | ❍ | ● |
| Workgroup Scheduling | ● | ● | yes with ccMail and notes | ● | ❍ | £199 per additional user | ❍ | From £895 |
| Data Synchronisation | ● | ● | ● | ● | ❍ | ● | ● | ● |

KEY ● Yes ❍ No








# On the CUTTING EDGE

Welcome to Cutting Edge, the section in *Personal Computer World* that combines our regular reviews of games, books and CD-ROMs with features bringing you the latest news about computing, and consumer technologies and online services.

We now have the most comprehensive coverage of these topics available in a general computing magazine. Stay with us and we'll take the pain out of keeping on the cutting edge.

## PCW Online




## PCW Futures



## PCW Media



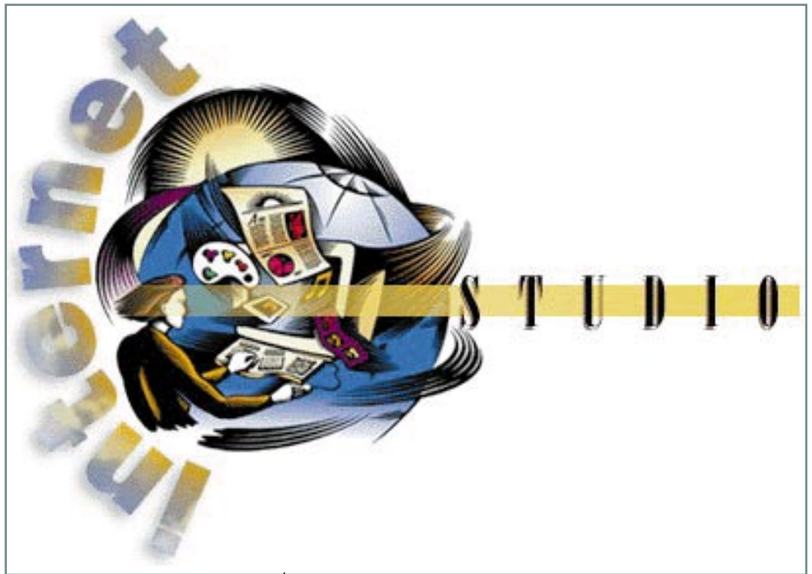
## PCW Fun

# Who do you want to fight today?

**Microsoft's lukewarm reception into the Internet arena shook the company into re-evaluating its whole Net strategy. Internet Studio is an attempt to claw back some of the ground lost to others. Mark Prigg reports.**

Microsoft has declared war on the Internet community, and on NetScape in particular, with the release of Internet Studio, its Web page design tool and environment.

Previously known as "Blackbird", Internet Studio is a complete end-to-end publishing system. Rather than just an HTML editor, it allows Microsoft's new extensions to HTML, which offer Java-like capabilities, to be used. This means that Internet Studio will require not only new browser software but new authoring tools and servers to be installed.




The Blackbird has flown. Microsoft has decided that "Internet Studio" is a more attractive name for its design software

### The way back

Microsoft's reason for introducing Internet Studio is simple. Bill Gates recently admitted that his company misjudged the Internet, while companies such as NetScape gained huge market shares in the browser and Web server market (NetScape currently holds around 80 percent of the browser market). Internet Studio, along with a new browser and server, is Microsoft's way back into the Internet marketplace.

"We didn't miss the Internet," explained Bill Gates recently. "We knew this was the future. What we did miss was the incarnation of it."

The Microsoft Network (MSN) contributed greatly to Internet Studio's existence. It was originally planned as a content creation system for MSN and Microsoft's CD-ROM products. But as the Internet market took off in such a huge way and MSN received a lukewarm response from users, Microsoft realised it had to do something.

Changes to Microsoft's Internet strategy have been fast, and the company now has its snappily titled "Internet Information Server", basically a Windows NT box with Web and Internet Studio extensions. Microsoft also plans to make inroads into the browser market with Internet Explorer, which in its v2 incarnation began to introduce some of the extensions to HTML that allow Internet Studio to create its rich multimedia content.

Although Gates has touted Internet Studio as "a kind of extension set to HTML", it is far more than that. Microsoft has made a big deal of Internet Studio's ability to "work with existing protocols such as HTML and HTTP," but this is not really the case. Users can view Internet Studio sites in other browsers such as NetScape's Navigator, but what they will see is a seriously cut-down version of the site without any of the bells and whistles Internet Studio allows sites to utilise. The HTML extensions Internet Studio will use will be published by Microsoft, so that any Web browser can incorporate them. Microsoft plans a free, downloadable helper application that will allow existing versions of any other Web browser on Windows 95, Windows NT and the Macintosh (i.e. NetScape Navigator, Spyglass, etc) to view all features of an Internet Studio site. Internet Studio 1.0 outputs HTML, so in theory, standard Web browsers on any platform can display Internet Studio content. Microsoft is proposing additional open extensions to HTML through the Internet Engineering Task Force. Both Internet Studio and Microsoft Internet Explorer will support these and other approved extensions to HTML, thereby providing users with an interactive Web experience.

The move to extend HTML by simply putting the standards into their software and then gaining approval has not gone down well with the market. One developer told us that "although they have you believe they are open, NetScape is now incredibly proprietary with its HTML extension. If Microsoft is going down the same road, we have trouble. The idea of the Internet is to be open, but it could be a bloodbath between NetScape and Microsoft."

### Fighting talk

Well, although Gates has done his best to play down confrontation, saying: "If there is an open standard supported by enough people, we will also support it", NetScape is in for a battle. "If a fight is what Gates wants, we are ready. We think the Internet should be based on open standards, and we will fight to ensure that happens," said James Barksdale, NetScape's CEO. He added dramatically that Netscape would "offer freedom to the masses. It's a tough fight, I'll grant you that, but we're brave... We believe that God is on our side."

Sceptics such as Sun's John Gage suggest Microsoft's future is behind them: "The computer industry is preparing for the new life forms to emerge. Is Microsoft going down a pathway that refines jellyfish when it's time to leap to vertebrates?"

### In the Studio

Many people see Sun's Java as a competitor to Internet Studio. However, there are some major differences. Java is a programming language, while Internet Studio is an online publishing system. Therefore, Java is designed for programmers while Internet Studio is designed for online publishers. Internet Studio includes open scripting capabilities but also a frame-based layout environment, hypertext authoring, content management, one-button publishing, and third-party design components (based on OLE). While Microsoft promises to include Visual Basic and C++ scripting capabilities directly, other programming languages, like Java, can be plugged in. So Java is just a part of the solution; Internet Studio includes the whole caboodle.

Some of Microsoft's extensions, such as frames, are also included in other products, including NetScape's browsers. However, as the "official" standard has yet to be ratified, there are likely to be differences in implementations for some time to come. Also in the market is JavaScript, a cut-down scripting version of Java developed by Sun and NetScape aimed at the non-technical market. And to confuse matters even more, Microsoft has announced that it has licensed Java from Sun and plans to fully support it.

From a developer's point of view, Internet Studio allows you to work with familiar tools and incorporate content from any OLE-enabled application such as Microsoft Office and other third party applications. It's also fully extensible via OLE controls and a published SDK, so sites will be far easier to keep up to date.

Internet Studio actually separates the design of a page from the content. Content providers can therefore create multimedia applications using an automated production process, keeping their content refreshed via continual updates. This would be ideal for something like an online newsapaper.

With its advanced text layout features, transparency effects, and streaming .WAV and MIDI sound effects, Internet Studio allows content providers to easily create sophisticated multimedia pages that convey a highly branded look and feel. Although these are (just) available in Java-enabled pages, they are still difficult to create without using Java.

Existing Internet publishing tools do not provide content providers with the design

## Designing sites in Internet Studio

Internet Studio is "far more of a designer's tool than anything else I have ever seen. Until now, programmers were the ones doing online services. Now this lets the designers on," believes John Wood of Prince, who was a Beta tester of the system.

Internet Studio's design environment is a forms-based development system similar to Visual Basic, although unlike Visual Basic, no programming is required. The development environment is fully graphical and easy to use. Page components are known as controls, which are basically small OLE applications. A number of pre-packaged controls such as navigation, rich-text, multimedia, and other special controls specifically designed to support the creation of Internet Studio pages, are included by Microsoft, but third parties can design their own controls (using the Microsoft OLE Control Development Kit packaged with the Microsoft Visual C++ development system). Although content is displayed within controls that have been laid out on Internet Studio pages in the Internet Studio designer, the content itself can be authored in any number of existing third-party tools.

Most existing OLE controls will also work in the Internet Studio environment, although Microsoft stresses they may not be optimised for online applications. For example, a standard AVI video control could be put on an Internet Studio page, but this would almost certainly require a huge download time. The controls that are part of Internet Studio are optimised for modem connections. Microsoft is to supply a set of Internet Studio electronic form controls that allow content providers to create rich MAPI-based Eforms without any programming. Internet Studio will also support all standard existing HTML forms.

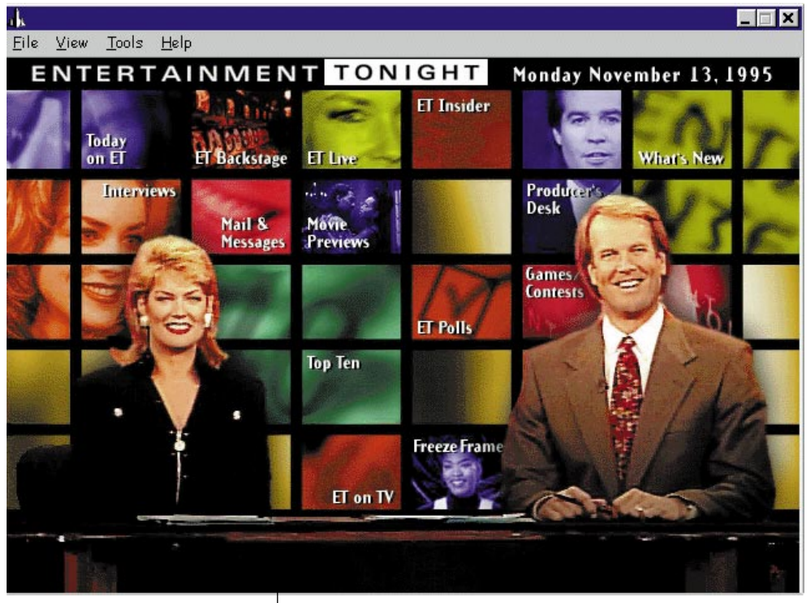
CUTTING EDGE

control necessary to establish a highly branded online presence, according to Microsoft. Advertising agencies the world over are wrestling to keep their brand in the online world, and Microsoft hopes to help them out. The graphical capabilities of Internet Studio mean that users can use more graphics and complex layouts than in any existing Web pages. According to Bruce Haldane, Microsoft's UK Internet Studio Product Manager, it will allow "Interactive Applications" rather than Web pages. "Using Internet Studio, you can take the whole screen in the same way a traditional application does. This adds a whole new dimension to online services," he claims.

**Making advances**

Internet Studio's ease of use is due to advances such as drag-and-drop editing and Microsoft's new wavelet-compression algorithms. These allow first text and layout to appear on a page, with pictures streaming in, gradually becoming clearer as more data is received by the browser. Internet Studio will also work with third party tools, preserving an organisation's investment in existing content authoring software. Graphic artists accumstomed to Adobe Photoshop can simply use the Photoshop plug-in for Internet Studio planned by Adobe, rather than learning a new package.

Adobe has announced that it will offer an Acrobat control that allows Acrobat .PDF documents to be included in Internet Studio pages. Also, Calagari has an integrated Internet Studio TrueSpace editor that enables designers to easily create 3D virtual worlds which can then be displayed in the Internet Studio sites by a Microsoft 3D VR control. The Internet Studio 3D VR system can import and export Virtual Reality and Modelling Language (VRML), although it looks as though, like HTML, Microsoft's VRML will include some proprietary extensions.




An early prototype produced an online version of "Entertainment Today", a US talk show

Macromedia has demonstrated an Internet Studio viewer and plug-in editor for Macromedia Director (Shockwave) movies, which are also viewable in NetScape's navigator.

Customers see and interact with Internet Studio sites through a set of pages. Internet Studio sites are then organised hierarchically into nested sections. Sections are similar to Explorer/Windows 95 folders, reflecting Microsoft's plan to integrate online services seamlessly into Windows 95.

**You've got the look**

Internet Studio's a frame-based layout environment gives the content provider complete control over the look and feel of pages. Arbitrary object placement, object layering, and advanced transparency effects can be used to enable designers to create sites.

Home Delivery allows users to schedule delivery of a site directly to their desktop and view the site at their convenience off-line. Through integrated OLE automation support, all aspects of the publishing and design processes can be automated using tools such as the Microsoft Visual Basic programming system.

The two main components that the content providers will work with when designing sites are the site design environment and the content authoring environment, reflecting the way Internet Studio separates design and content. The site design environment is used to create designs, whereas the site manager is used to create a page's structure and to organise its content. The site manager also allows the content provider to manage content updates. Using the site manager, a site is organised into nested sections. Each section may contain pages, style sheets, and media content objects such as graphics, documents and sound. Pages and their associated controls are created and modified by the page editor and individual control editors. Similarly, the style-sheet editor allows designers to create and modify style sheets that supply formatting information for text-based controls. The content authoring environment includes the Internet Assistant for Microsoft Word which allows the creation of HTML structured stories consisting of graphically-rich multimedia documents.

**Security matters**

Internet Studio will support Secure Transaction Technology (STT) for financial transactions, and SSL and PCT for secure communications across the Internet. There will be security measures for downloading OLE components that are part of Internet Studio pages. Companies will be able to certify their OLE components and code scripts, so consumers can choose to only download components supplied by clearly identified, known companies (based on Microsoft's digital signatures technology).

**Static and dynamic pages**

The Internet Studio system supports both static and dynamic (created for each user) pages. A static page contains information that is not updated on a frequent basis. In both cases, Internet Studio displays content by retrieving objects from a server-based Cacheing Object Store (COS). This causes objects (including pages, controls, and actual content) making up an application to be sent from the Internet Studio server to the client machine. The COS is a distributed object system that allows applications to be accessed with very high performance, even over slow links (down to 9600 baud).

## What ever happened to MSN?

With all the hype surrounding Internet Studio and Microsoft's whole new Internet strategy, one could be forgiven for asking about MSN. Remember MSN? Microsoft's online service that was going to replace the Internet, change the world and make people hold hands and sing happy songs together under a poster of Bill Gates....

It didn't really happen, did it? MSN was launched to almost no users, and suffered from a lack of content and poor access. But along with the company's rethink about the Internet, Microsoft is repositioning MSN as an Internet service.

"We want to make MSN the best site on the Internet," explained Gary Hunt, MSN UK's business development manager. Microsoft has now linked up with Pipex in the UK to allow MSN subscribers access to the Internet, and it hopes MSN will become "Internet Plus".

"We are planning to make MSN a kind of super Internet Directory, with its own content," explained Hunt. "We also plan to soon make all of MSN's exclusive content available from the Internet, and we already have a dedicated UK MSN production team aiming to build the UK community of MSN users."

However, whether or not MSN takes off seems almost irrelevant to Internet Studio. Although MSN will undoubtedly become a useful directory service, it seems that it has not worked out as Microsoft intended. Internet Studio was first conceived as an MSN content creation tool, but due to overwhelming market forces it now seems Microsoft is in some way admitting it was wrong.

As one analyst told us, "The time they wasted with MSN could mean their downfall in the Internet market." Or maybe not.

As objects are transmitted from the server to the client, they are cached on the client computer. The Internet Studio client cache is permanent, so objects are maintained between sessions. Internet Studio tracks which objects have changed between sessions, and only transmits changed objects from the server to the client, thus dramatically boosting performance. Design elements such as mastheads, graphics, text, and multimedia components that have not changed between application sessions are taken from the cache without incurring a transmission delay.

Internet Studio caches at the object level, so if only one object on a single Internet Studio page has changed, only that object is transmitted. The rest of the page is displayed from the cache. Although products such as Navigator already include cacheing, this is one of the aspects of Internet Studio that requires a Microsoft branded server.

Internet Studio pages are then served on the Internet over HTTP, the standard communication protocol for the World Wide Web. Although Internet Studio uses HTTP, and is described as "extended HTML" by Microsoft personnel, it is a complete online system in its own right, but one that uses HTML and HTTP to allay fears about a totally proprietary system.

### Let battle commence

Criticising Internet Studio, although it is undoubtedly a superb online environment, is easy. For one thing, if you don't have Windows 95 and the high-spec machine that goes with it, you cannot use Internet Studio. Microsoft has promised Macintosh versions of the browser but will not commit to a firm date. Does this form part of a Microsoft world dominating strategy for Windows 95? Probably. There will undoubtedly be a Macintosh version of Internet Studio's browser add-on, but Windows 95 remains the best operating system for this kind of application.

Internet Studio will not necessarily succeed. Microsoft is entering the market at a time when the big players are already established. However, it is also entering just before the Internet becomes a reality for the mass market. If it can push the idea that Internet Studio is the best Internet access method around, then it could well clean up. The disadvantage Microsoft has is that not only does Internet Studio need to succeed, but so does the company's server and browser. Unless the company can persuade other server and browser software vendors to support its HTML extension, the whole strategy may well fail, as the level of success the server and browser would need to achieve seems unlikely.

There is also NetScape to consider. With its Java extensions and installed user base, Navigator could be the winner in the Internet battle. NetScape supplies servers, of course, and it seems unlikely that it will support Microsoft's extension. Only time will tell if Bill Gates has really missed the boat.

CUTTING EDGE

# net.answers

**Nigel Whitfield** guides you through the Internet.

### Caution! — children on the Internet

*Q. My daughter is at a specialist co-ed school with some bright kids — A level maths at 12. The Head would like to set up an email system but worries about a whizkid getting into the "porn" stuff. Having read in* PCW *about gatekeeper systems, I'm sure any of these would be broken into in moments. It seems the only answer is to use a server dedicated to email. What are your suggestions?*

A. There's a growing number of applications, such as NetNanny and SafeSurf, that are designed to prevent unauthorised access to different parts of the Internet. Most of these programs sit between your existing Internet software and filter out requests for certain sites. Some of them will also scan email and check for particular words or phrases, flagging them for attention.

However, you need to keep such software up to date, otherwise it won't prevent access to new sites as they appear. And it's also possible to find ways round some of the programs very easily, which means they may not be suitable for the needs of your daughter's school.

The best way to protect children from seeing things you don't want them to is to supervise their access to the Internet, but obviously that's not always practical. The next best thing is to set things up so that they don't have access to any of the programs that can be used to retrieve unsuitable material. For instance, don't provide access to the World Wide Web or to file transfer programs if you're worried about what might be seen.

One way to do that is with a mail-only connection to the Internet, which might be a little limiting for some needs. On the other hand, it could also be a cheap way of connecting. Newsgroups are also useful for many people, including children, but there aren't many pieces of software that will let you download lots of newsgroups and keep a separate count of read messages for each person.

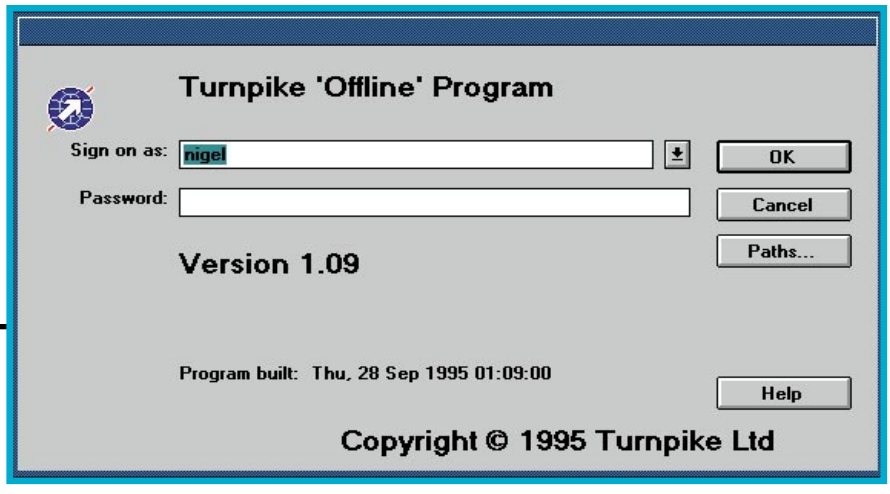
The Turnpike Internet software *can* do this, but it also includes NetScape so people might be able to browse the Web, unless you only allow them access to the offline part of the program which provides access only to mail and news.

An alternative is Virtual Access, which can be used with conferencing systems such as CIX and CompuServe as well as with an Internet provider such as Demon or Research Machines. VA also allows each individual to have access to a selection of newsgroups, and includes more facilities that may be of use in a school, such as the ability to review all outgoing mail messages before they're sent.

The advantage of a solution such as Turnpike or VA is they can be used to allow students access to only mail and newsgroups, but still allow staff — or supervised children — to play with the World Wide Web or other parts of the Internet.

Finally, remember that the information available will also depend on the service provider you choose. The Research Machines Internet access, for example, is specifically tailored for schools and it therefore doesn't carry some of the "problem" newsgroups you might want to restrict.

For more information on the software, contact Turnpike on 01306 747747 or Ashmount Research on 0171 831 4000.




Turnpike may be one solution if you want to restrict access to certain parts of the Internet

### Points on ping

*Q. I have heard that you can use a program called ping to test the speed of your modem and also to check if an Internet address is up and available. How does this work?*

A. Strictly speaking, ping isn't a program for checking the speed of your modem, but it does give you information about the speed of a link between your computer and another one.

Ping works by sending a message to another computer and timing how long it takes to receive an echo of that message back. The time is

usually given in milliseconds — thousandths of a second. You can't use it as a complete guide to the speed of your modem as there are several factors affecting the time it will take to receive a response — including, sometimes, problems with the computer you're trying to reach — but it could give you a rough guide.

For instance, if you dial into Demon Internet, the computer you're connected to has the Internet address 158.152.1.222. Using the command ping 158.152.1.222 will send messages between your computer and the Demon Internet gateway. Depending on the speed of the modem you're using and the quality of the connection, you should see a result of between 200 and 300 milliseconds.

If you now try using the same command with a computer elsewhere on the Internet you'll see a different figure. Sometimes, if you hit a slow link, this will be much larger. Sometimes ping will also report "packet loss". This is an indication of the amount of information being lost en route from your computer to the one it's trying to connect to. Most applications such as ftp and Web browsers won't actually lose data, but they'll re-send it to overcome the problems, which means everything will take longer to transfer.

You can use ping to see if another computer is available; it should give you a fairly good indication, returning a message such as "No route to host" or "Host unreachable" if the other system isn't available. Sometimes all that happens is the messages ping sends disappear, in which case you might see no message or a report of "100 percent packet loss". Either way, you probably won't have much luck connecting to the computer with any other programs.

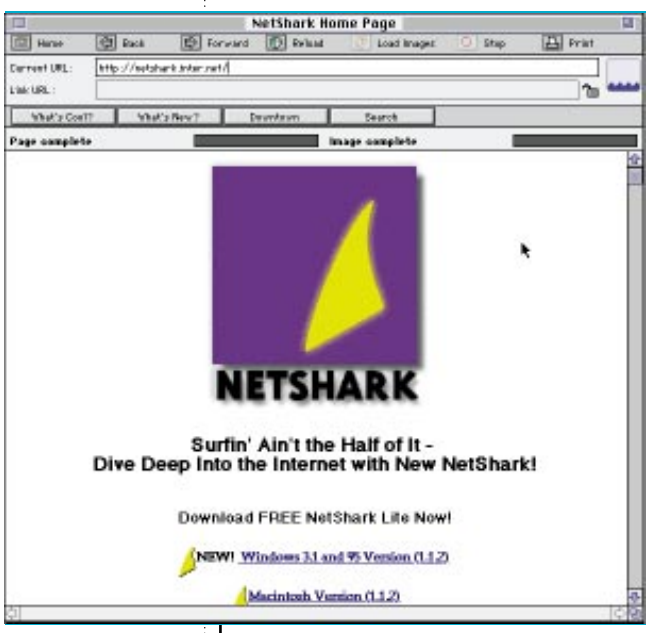
**Soft options**

*Q. Can you use Net browser software such as NetScape with all service providers or do you have to use their own software?*

A. Broadly speaking, you can. Most modern Internet applications have two basic requirements — a TCP/IP connection and a protocol stack. The TCP/IP connection is the link between you and the service provider — this is the most crucial part. If you have an Internet connection to most providers, the link will be using TCP/IP (though it may often be described as PPP or SLIP, which are simply ways of sending the TCP/IP data over a modem link). Some people claim to provide Internet connections using UUCP or terminal access, but these aren't true Internet and you won't be able to use TCP/IP.

The second important part is the protocol stack. This is the program that sits on your computer and talks TCP/IP to the rest of the world. It usually handles dialling and making the connection via modem. All your Internet applications, such as mail programs, Web browsers and ftp software, talk to the protocol stack. There are several protocol stacks: some are free, some are supplied by your service provider.

On the PC, as long as the protocol stack is "Winsock compliant" — and all but some very old ones are — you'll be able to use just about any application you like, including NetScape and NetShark. The protocol stack on the Macintosh is called MacTCP, which comes with the most recent version of the system software.




As long as your stack is Winsock-compliant, you can go hunting Shark

**Who's watching you? And who's watching what you're watching?**

*Q. Does the service provider, or anybody else for that matter, have any indication of my*

*location on the Web at any point in time?*
*Q. Can anybody see what files I have downloaded?*
*Q. Can anybody see which newsgroups I am subscribed to, or which messages I have read?*
A. The simple answer to all these questions is a qualified yes. But even so, there's probably not too much to worry about.

When you access a Web page, the server will log the pages that were requested and the name of the computer that made the request. By looking at the log for my own site, for example, I can work out which machines were using a browser that automatically loaded images. And if the machine is one in a domain like demon.co.uk or dial.pipex.com, there may only be one user so I can track them down easily. But if it's a machine in a company, there's no data to tell me who looked at the page.

Similarly with file transfers and news downloads, most systems will log the machine that requests information — though many ftp sites ask you to enter your email address — not the user. There are ways of finding out who's using a machine when it connects to a Web site or an ftp server, but they're not always all that reliable. They will become more reliable in the future, but the problem then won't be people snooping on your private activities, but targetting of your address by companies for marketing purposes.

Remember that for a popular Web site, the amount of information that would have to be logged to keep track of everyone would be astronomical. Sorting through it would take up too much time for most people to contemplate. Yes, it can be done, but you won't usually have much to be fearful of. And even if someone can look in a log file and see that you've transferred a particular news article to your machine, they still can't say whether or not you really read it.

By their nature, computers on the Internet tend to record a lot of what you ask them to do. However, there are so many people using so many services that in practice, tracking down a single person's usage would be very hard to do.

### SMTP, your flexible friend

*Q. As you no doubt know, Demon Internet provides SMTP connectivity as its standard for mail transmission. This is a great shame as there is much less mail client software from which to choose. Of the freeware packages currently available I particularly like Email Connection by ConnectSoft and the equally or better known Pegasus Mail, and would dearly like to use either. However, as far as I can make out these only use POP3 for incoming mail.*

*Is there a work-around you know of, or can you recommend other equally good public domain email clients for SMTP?*
A. Demon Internet isn't the only company using SMTP to deliver mail to its customers, but it's certainly one of the largest. You're right that it does restrict the choice of software but there are a number of advantages, including the ability to have as many users on your computer as you like for a single monthly fee.

Although the number of public domain or shareware mail programs that can use SMTP is limited, there are a few, including FImail, which is available from Demon's own ftp server.

A more flexible solution, however, is to use one of the programs that can receive mail by SMTP and act as a local POP server. This way, you have the flexibility offered by the unlimited user names of a Demon account and the choice of mail software offered by POP. Instead of pointing your mail program at the Internet provider's computer for retrieving mail, you tell it to collect mail from your own

### SPAM in the post

**Q. People in some of the newsgroups I read keep talking about SPAM. What's that?**
A. Spam is the word used on the Internet to describe news articles that are posted to lots of newsgroups, including a large number of inappropriate groups.

There are a number of different ways of posting to more than one group. The right way is by cross-posting, which means that even if a reader is subscribed to two or more of the groups you send your message to, they'll usually only have to download one copy, and most news-reading programs will only show them your post once.

Posting your article once to each group, or to several sets of groups, is a nuisance as it will have to be downloaded several times rather than once, and people will usually see it in lots of groups instead of just the first one they read. It's considered particularly bad form to post to groups that aren't relevant, and you'll usually receive a lot of mail pointing out the error of your ways.

## If the Web fits...

**Q. We've connected our office network to the Internet, and now we want to run our own Web server. Do we need to learn Unix to set one up?**

A. Until recently, the answer to your question would have been yes, but now there are several alternatives that can be used to avoid having to administer a complicated Unix system — though bear in mind that most Windows or Mac-based solutions won't be able to cope with as much traffic as a good Unix Web server, and those are much easier to set up than they used to be.

If you're running Windows there's a selection of servers, including a commercial one from Quarterdeck, and some basic shareware ones. Quarterdeck's server can run scripts based on DOS batch files or Visual Basic programs. OS/2 users should take a look at GoServe, which allows scripts written in REXX to be attached to your Web pages. In the Macintosh world Apple has its own Web server solution which can use AppleScript, making it easy to link most applications to your pages, and NT users have a choice between the free EMWACS Web server or its more sophisticated commercial sibling, Purveyor.

So, whatever system you're used to, you'll be able to find a Web server to suit — but make sure it can cope with the amount of traffic you're expecting. A Windows PC, for example, is probably much better suited to an internal company Web site than something that will be visited by hundreds of people around the world.


With a gateway program like tpop 3 you can use any POP-based mail program such as Eudora, with providers that deliver your mail using SMTP

computer where the SMTP to POP server will have stored it when it was delivered from your service provider.

The best place to find a program that can do this job is by looking on Demon's ftp server — not surprisingly, there are quite a few there. Some offer more facilities than you're likely to need and at least one, smtp_pop, is designed specifically to work with Pegasus. An alternative, tpop3, will also work with Eudora and should work with most other POP-based mail programs.

Both these and other alternatives can be found in the /pub/ibmpc/win3/winsock/apps directory on ftp.demon.co.uk. ■

## PCW Contacts

**Nigel Whitfield** is a freelance writer and maintainer of several Internet mailing lists. He welcomes comments via the address **nigel@stonewall.demon.co.uk**.
If you have questions you'd like answered, please send them to **net.answers@stonewall.demon.co.uk.**
Please note that a personal response to every query cannot be guaranteed.

# net.news

**PJ Fisher** has his finger firmly on the Net pulse.

## Net porn: no worries

A survey sponsored by AST Computer has revealed that Internet porn does not worry people as much as headlines would suggest. Six out of ten respondents said that they were unconcerned about their children accessing porn via the Internet.

Over 100 high street shoppers were quizzed about motivating factors behind purchasing a PC, planned or recent. A spokesperson for AST expressed surprised at this seeming lack of concern by parents, given the publicity that Internet porn has received in the last twelve months.

However, Internet access was a key purchasing factor for just 44 percent of respondents while just over a quarter conceded that they have no intention of ever accessing it. Of those parents who did want to connect to the Internet, 60 percent were unconcerned about the possibility of their children accessing the more dubious parts of the World Wide Web and newsgroups.

### PCW's Best Of British

For those that who have had difficulty finding *PCW*'s Best Of British web site, here is it's new URL: http://www.vnu.co.uk/vnu/hc/pcw/bob.htm. By the time you read this, the new-look BOB site should be fully online, so take a look and don't forget to keep your BOB nominations coming.

## Internet on a chip

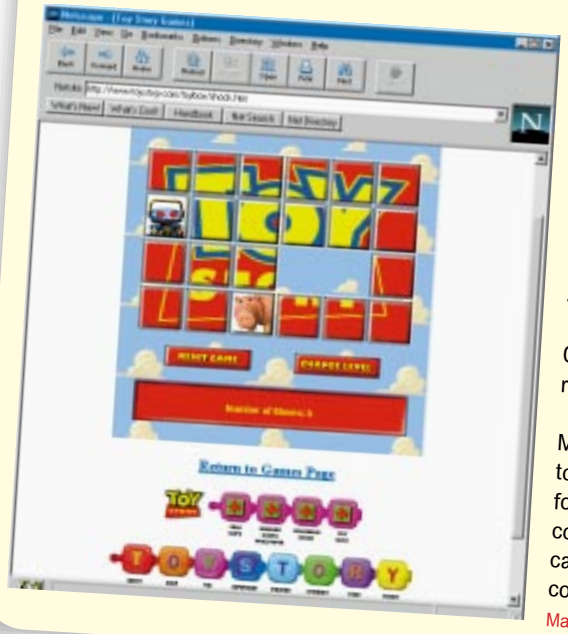
The LSI Logic Corporation has announced a single-chip architecture which it claims could appear in a new generation of Internet consumer devices. Aimed at hardware developers, the technology is designed to be customised to allow low-end devices such as TVs or PC monitors to browse the Web and handle two-way communications via the Internet.

"We have the technology to make a sub-$500 Internet system a reality," said Brian Halla, executive vice president of LSI Logic Products Group. The Internet on a chip was developed using a proprietary design which fuses microprocessor and logic cores.In addition, chips can include cores for V.34 modems, and MPEG 1 and 2 standards. LSI believes that OEMs would be able to customise chips and get Internet products to market ahead of rivals.

LSI Logic: http://www.lsilogic.com

## Shockwave shocker

MacroMedia has made available its Shockwave plug-in for Netscape 2.0 on its home page. Shockwave will allow Web developers to tag Director movies into HTML, bringing animations and sound directly into the browser window. With due modesty, Bud Colligan, CEO of MacroMedia, announced that "the Web will never be the same again".



ShockWave uses a post-processor which compresses Director files pulled down by Netscape by 60 percent, claimed to make downloading Director files faster than some static graphics. However, anyone without at least a 28.8 modem is going to find the wait torturous.

MacroMedia's home page has links to some of the first sites to make use of Shockwave. MacroMedia is working on Shockwave plug-ins for Microsoft Internet Explorer, Microsoft Internet Studio and CompuServe's SpryMosaic browser for release later in 1996.

Meanwhile, Silicon Graphics and MacroMedia have agreed to work together to develop a new set of open multimedia formats and APIs to extend Java. Both companies believe this will extend Java's capabilities in 3D rendering and video conferencing on the Internet.

MacroMedia http;//www.macromedia.com

# The Americans do Europe


What many people thought was going to be the European version of AOL (America Online) has turned out to be something completely different, and very European.

Europe Online UK will offer news, entertainment, shopping, interactive language courses and information on European events. News feeds will come from Reuters.

Great Universal Stores has been lined up to provide goods via a Shoppers Universe online shopping area. Europe Online is confident it will take 35 percent of the consumer online market within five years. Europe Online 0800 106610

## BT Watch

*All BT rumours and dirt gratefully received. It's good to talk*

According to industry sources, we shouldn't perhaps expect too generous a deal from BT when its free local calls become reality. Those expecting to dial free anywhere, anytime within the local area may be disappointed. Instead, BT is likely to arrange its local calls based specifically around times and routes. So you may be able to call, for example, from Slough to Reading but only between, say, 10a.m. and 12p.m.

Mind you, BT has been busy lately, not just digging up roads but football pitches. BT is one of four IT partners (the others being Microsoft, Digital and SEMA) providing hardware and infrastructure for June's European football championships. Eight football grounds around England, including Anfield, Old Trafford and Wembley, will benefit from dedicated fibre optic links and ISDN transfers which will be left in place after the championships are over. Never before will results and statistics have been transmitted so fast. All part of the ongoing construction of the UK's info superhighway, a BT spokesman assured us.

But unless AT&T is prepared to get its shovels out and build a rival national infrastructure to BT in the UK, BT's hold on the UK market will remain pretty much intact. The real profits for AT&T may lie in the specific business markets and regions (hello, Mercury) that bring quick profits for minimum investment. And that is probably what they will do.

*pf_fisher@pcw.ccmail.compuserve.com*

# The next generation comes by cable

As part of continuous research, CableTel is looking at ways to deliver Internet access using fibre optic cables or across conventional telephone lines. But it believes that a new generation of cable Internet servers could deliver data at 10Mbits/sec, using a principle similar to Ethernet. A single cable server could be used by a single machine, a group or even a group of businesses. However, CableTel's Jag Sanger said that the real issue behind Internet access lies not with bandwidth for the client end but at the server, where improved access speeds to servers is putting a severe strain on the backbone. This is where technologies such as cable servers could help.

He stressed that such cable servers are not a product ready for market but presently exist as a research model, among other projects that CableTel (and other cable companies) constantly monitor.

CableTel also believes that they could easily deliver access at higher speeds than 10Mbits, but can't until cable hardware manufacturers decide it is cost effective.

As more people start to use cable modems the price will inevitably go down and cable operators are looking at using modems as a possible means of delivery. But as with ISDN, the whole market is being stalled by the price of terminal equipment.

CUTTING EDGE

# Adobe in Java jive

Following on from the agreement with Sun Microsystems to licence Java, Adobe has announced that future versions of Adobe PageMill and Acrobat will both support Java applets. Java integration may also feature in other Adobe products. Adobe PageMill uses drag and drop editing techniques to create Web pages without the need to write HTML tags.

On a recent London visit Bill Kraus, the former head of Ceneca, and Product Designer for the newly formed Adobe Internet Products Group, said that the next version of PageMill will include support for Netscape 2.0 extensions and that a Windows 95 version is in the pipeline, possibly as early as mid 1996.

# New Web magazine

Webmasters and HTML junkies might have a new magazine to put on their subscription list with the launch of *Web Developer*. A quarterly publication, it is aimed at those who like to get their fingers dirty writing CGI scripts and hard-core HTML. It will also provide hints and tips to network administrators and firewall operators. A subscription will cost £21 per year.

Mecklermedia 0171 976 0405

# ✪Net Opinion

## *Where Do You Want Go Tomorrow?*

The Internet is a very exciting development". — Bill Gates, CEO Microsoft Corp, December 1995. Stating the obvious perhaps, but it's something that the rest of the computer industry probably didn't want to hear. Suddenly, the sneers that greeted the admittedly not too successful launch of MSN and version 1.0 of Internet Explorer turned to apprehension.

Within hours of Bill Gates' barnstorming, satellite-linked performance to more than 600 journalists worldwide, Netscape's stock had fallen. Netscape may still produce the best Web browser in the world, but only Microsoft has the clout to put the Internet into applications and directly into an upgraded Windows 95. Netscape, which produces a browser and not much else, remains a vulnerable single-product company in a fast-moving sector of the industry.

Once again, Bill Gates has proved that there is no harm in being a Johnny Come Lately when it comes to the computer industry. "We're hardcore about the Internet," he said. This may be disturbing to some people, but the good news is that the future Internet-savvy applications that were demonstrated in December looked very cool indeed. They obviously mean to compete for dominance, but it seems Microsoft is really thinking about new ways of working with the Internet, the Web and what people want to get out of it..

Oracle has also recently woken up to the Web – but on the wrong side of the bed. Here's a company that wants to protect an installed base of solid database technology, so it launches a new Web browser and its chairman starts having visions. But the so-called PowerBrowser (see *Newsprint*, February 1995) turns out to be little more than a client device

*Bill Gates*

meant to utilise those Oracle servers already in existence. Despite the company's claims, it does nothing to further the Web as an open system.

We are told that PowerBrowser fully supports HTML 3.0 and (of course) Netscape's own clever work on pushing HTML. But it doesn't. PowerBrowser doesn't even support such things as coloured backgrounds. It will of course support Oracle's Basic "applets" and of course Oracle servers. So what's open about that? And what use?

And Larry Ellison's vision? Possibly the most open idea anyone has come up with in computing for some time. You know, the one where PCs become about as appealing as the abacus to business and we all tout little $200 network devices that plug into super-networks downloading mini applications on the fly. Sounds wonderful; but is it? The amount of column inches dedicated to "Larry's vision" has got more than one journalist agitated about the end of operating systems and the death of the PC. But at time of writing there was still no concrete sign of any network device or indeed anything at all.

The fact is that desktop PCs liberated users from mainframe computers and dumb terminals. The PC brought real computing power into the hands of individuals. Apple, IBM, Microsoft and thousands of other developers brought about a fundamental social and technological change.

Is Larry's vision so great? Instead of PCs we would have dumb black boxes that need to get applications from a network (with attendant security risks), need bandwidth to supply them fast (not here yet) and work out some kind of payment system (with attendant security risks). This would immediately hand power over to the network owners and software net distributors. Admittedly, a lot of desktop applications are big and too slow, but the net delivery won't change people's thirst for industrial strength applications.

But supposing these boxes do appear on the market. We plug them into a network and do what exactly? Where are all these distributive computing applets supposed to be coming from – certainly none are ready for any early launch of an Oracle black box. Without these, they are just cute Web browsers.

The Microsoft approach of retaining the PC while bringing the Internet into the OS and

*Larry Ellerson*

applications such as Office seems to me the real way forward. There is still room for competition (yes, even with Microsoft) and people still have the right to put what they want on their PC, use it and never even go near a network if they don't want to. Larry's vision seems to conjure up good PR and very little else.

# net.newbies

## Getting started on the Net: what to do, where to go

These pages are designed to be an easy-to-use reference guide to the Internet for the novice. Here's an easy guide to the tools which will help you make the most of the Internet.

**So what is the Internet?**
The Internet consists of millions of computers interconnected in a global network. The number of users is difficult to measure, but those worldwide who can at least exchange electronic mail messages is estimated to be 30 million and growing.

**What about this World Wide Web then?**
It is *not* the Internet. It is a service on the Internet which uses special software known as Web Browsers (usually available free) to give users access to pages of information with pictures and multimedia instead of just text. About 15 million people around the world have access to the World Wide Web.

**Sounds great. What do I need to get on?**
A PC of almost any age can be connected to the Internet as long as you can plug it into a modem. You don't even need to be able to view graphics on your machine to look around (although it helps).

A modem allows your computer to dial in to another computer with a modem and communicate with it. They come in different speeds, from 2400 baud to more than ten times that. When you are using the Internet, the speed at which things work is more likely to be limited by the speed of your modem than by that of your computer. Buy the fastest you can afford. An old 2400 baud "V.22bis" model is fast enough to exchange electronic mail messages, but to send and receive files, or use the more exciting services on the Internet, a modem which runs at a speed of at least 14,400 baud "V32.bis" is vital. Fortunately, these have plummeted in price over the past few years and now cost as little as £100. If you have the money, go for a 28,800 baud V.34 modem. Over time, you'll get back the added cost by reducing your phone bills.

**Okay, I've got a modem. Now what?**
For a modem to bring you information, it has to have a number to dial. This is where a "service provider" comes in — you have to subscribe to one if you want to get online. Whatever kind of connection you have set up, you will have to pay your phone costs on top of any subscription, unless you are lucky enough to get free local calls through a cable company. The bigger service providers will have the numbers you dial, PoPs (points of presence), scattered across the country so you only have to dial a local number.

If there's no company near to your home which offers Internet access, you may have to pay long-distance phone rates. Once connected, though, it doesn't matter where the information you are accessing is physically located: you are always charged at the same rate. A list of providers and telephone numbers is available in the panel below. For more details, have a look at the supplement banded with the January issue of *PCW*.

Full Internet access, which allows you to use email and Internet services for any amount of time, limited only by the size of your potential phone bill, costs more, currently between £8.50 and £15 per month. There are dozens of companies offering this kind of Internet access, none of them big enough to dominate the market. The basic service being offered is largely the same, although some higher-priced providers may claim to offer a more personal service or a better selection of access software.

**Why don't I just join CompuServe?**
Or you could try AOL, Europe Online, UK Online and MSN who all now offer Internet access and also have a large number of services of their own to which only their subscribers have access. These services include official technical support for hardware and software by electronic mail, online games, vast indexed software libraries and databases of business or consumer information. A monthly subscription tends to cost between £5 and £10 per month, plus a charge per hour if you are online for more than a set number of hours in that month. However, as the market becomes more competitive, prices are falling and CompuServe has just announced significant reductions.

Demon Internet is the best known and most popular of the standard Internet operators but doesn't cater too well for beginners. Perhaps better for the raw newbie is Easynet (although it only has Pops in London and Edinburgh) or UK Online. UK Online is a special case, a cross between an Internet provider and an online service. For £8.50 to £12.75 per month it offers unlimited access to the Internet, partially "censored" to make it safer for children to browse, plus access to online magazines and other services.

Any good service provider should provide you with appropriate access software when you sign up, and if you want to choose something different, most of it can be acquired online, free of charge.

### PCW Contacts

**AOL** 0171 385 9404
**CompuServe** 0800 289378
email:70006.101@csi.compuserve.com
**Delphi** 0171 757 7080
email: uk@delphi.com
**Demon** 0181 371 1000
email: internet@demon.net
email: sales@demon.net
**Easynet** 0171 209 0990
**Europe Online** 0171 447 3400
**UK Online** 01749 333333
email: sales@ukonline.co.uk

If you don't understand what's written here or have any suggestions, please let us know. Contact **Paul_Fisher@pcw.ccmail.compuserve.com**, or "snailmail" (Internet-speak for the post) to the *PCW* Editorial address on page 12.

CUTTING EDGE

## Part 3: Forms and scripts

# DIY Web pages made easy

**In this, the final part of our series on creating your own Web pages, Nigel Whitfield deals with forms and scripts, two important features for your Web pages, and shows you a way of adding interest to your document.**

So far in this series we've looked at some of the ways in which you can create pages with lists, image maps and other features, which should provide you with the basis of some fairly clever pages. But look around the Web and you'll see that there are a lot more tricks which can be performed, such as pages where you can fill in all your details and click on the send button to request a catalogue, or search a database.

The way all this is handled is with two important features: forms and scripts. We've already seen how a script is called when you use an imagemap, but the scripting system for Web pages is much more sophisticated than that. It's based around something called CGI — the Common Gateway Interface — which is designed to make sure that you don't have to learn a different way of writing scripts depending on which type of Web server you're using. If a script was written for the NCSA Web server, it should work with the CERN version, and vice-versa. If you're using a Web server that's running on a different type of computer, like OS/2, Windows or Macintosh, there may be some differences, but the basic principles are pretty much the same.

### The ins and outs of scripting

Whatever type of Web server you're using, scripts have one important thing in common: whatever the script prints out on the screen when it's run as a program, is what will be sent back to the browser when someone clicks on a link that activates it. So, you'll often be able to test your script before installing it on a Web site, to make sure that it produces the right messages.

However, there's one important thing any script has to do before it can send information destined for the browser: it has to say what sort of information is being sent back (which can be either text or HTML). That's all done by including lines at the start of your script that specify the Content-Type. Here's an example, which would work as both a DOS batch file or a Unix shell script, and tells the browser that the rest of the information should be treated as pre-formatted text:

```
echo Content-Type: text/plain
 echo
```

The second "echo" is important — there must be a blank line between the Content-Type header and the rest of the output from your script. If you want it to display HTML, just change the content type from text/plain to text/html. For example, if you include a link that looks like this:

```
<a href="/cgi-bin/show-date">
```

then the script on the left will produce a display like the one shown in Fig 1.

**Fig 1** *This is the result of our date script, running on a Unix-based web server. You'll need to alter the date command for the same script to work under DOS*


### Show-date script

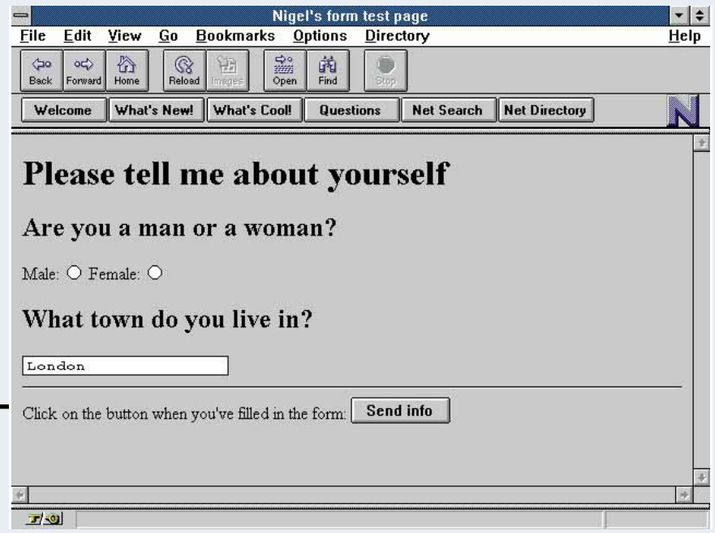
```
echo Content-Type: text/html
echo
echo "<html><head><title>The time
 is now ...</title></head><body>"
echo "<h1>Current time on this
 server</h1>"
date
echo "<P>Thank you for calling.
 Have a nice day<P>"
echo "</body></html>"
exit
```

To make the script run you'll have to put it in the scripts directory on your Web server; the /cgi-bin/ at the beginning of the URL for the script is a shorthand, which the server automatically translates to the real name of the directory (and on an NCSA server, you might need to use "/htbin/" instead). Depending on the way your server has been set up, that might be a shared directory, or it could be a directory in your own private Web space. If you rent Web space on a commercial server, remember that you might not always have permission to run scripts, so if you want to use them to spice up your pages, check before signing on the dotted line.

So, now you know how to send output from the script to the browser; what about the opposite direction? It's not quite so straightforward, but once you've got the hang of it things should be pretty simple. When information is sent from a browser to a script via CGI it's built up into a query string (sometimes saved in a variable called QUERY_STRING). You'll probably have seen a few query strings without having realised it, when you've clicked on some types of link and seen your browser display a URL that looks something like:

```
http://www.stonewall.demon.co.uk/cgi-
bin/scriptname?address=nigel@
stonewall.demon.co.uk&sex=male&
town=London
```

*Here's the form that's produced by the HTML code. Most modern browsers support forms, including text-based ones like Lynx*




### Now you have your web site

Once you've created a web site your next problem is to make sure that people visit it, and with hundreds of thousands of sites to choose from, that's no mean feat.

There are a number of ways to spread the word, but the aim is always the same; make sure that other people have links to your page. If you know there are other pages on the same topic it's worth contacting their authors and asking for links to your site. Similarly, if there's a newsgroup covering the topic, try posting a short announcement or contacting the maintainer of the FAQ for that group to let them know about your pages.

It's also important to get your site listed in the various guides to the Web, like Yahoo and UK Index. Most of these search engines allow you to fill in a form with details of your pages, and it's worth making the effort so that anyone searching can easily track you down.

Finally, if you're renting space on a web server, check with the server administrator to make sure you're listed in their customer index.

Everything after the question mark is the query string, which consists of a series of variables and their values, separated by ampersand (&) symbols. Your script can use those variables to control what it does: it could be displaying a personalised message on the browser, or simply making an entry in a file to log who's been accessing your pages.

Depending on which Web server you're running and the language in which your script is written, there are different ways of actually turning the information from the query string into something that can be easily used . But before we look at that, let's see how you get the information from the browser in the first place.

### Form filling

Forms are one of the most important features in HTML and when you first look at them they can appear quite complicated. But that's not really the case: here's a Web page that would create a query string like the example above —

```
<html>
<head><title>Nigel's form test
 page</title></head>
<body>
<h1>Please tell me about yourself
 </h1>

<form method=post action="/cgi-bin
 /scriptname"

What's your e-mail address?

<input name="address">

<h2>Are you a man or a woman?</h2>

Male: <input type="radio"
 name="sex" value="male">
Female: <input type="radio" name=
 "sex" value="female">

<h2>What town do you live in?</h2>

<input name="town" value="London">

<hr>
```

Click on the button when you've filled in the form:

```
 <input type="submit" value="Send
 info">

</form>
</body>
</html>
```

The <form> tag tells your browser (and there are very few now that don't support forms) that it's found a form, how it should be sent to the Web server, and what should happen when it's submitted. In this case, the script

```
/cgi-bin/scriptname
```

will be run.

The "method=post" means that the query string will be fed into your script and is the preferred way of sending information. What it means is that your script will see lines that look like:

```
name=nigel@stonewall.demon.co.uk
sex=mail
town=London
```

which is often easier to understand than the long QUERY_STRING variable, which is all you'll see if you use the "method=get" alternative. The latter also limits the length of the query string to the maximum size of your environment, which means that you may not, for example, be able to let people type in long comments.

The other parts of the form are all <input> tags, and they all work in the same way. The "type=" tells the browser what sort of field you want, and the name is the name of the variable that will be set.

We've used a few different types of field in our example. For the email address there's no type, so it's treated as a simple text field. The next entry can only be one of two choices, so to prevent people sending witty replies like "Both", we've used the "radio" type. This works like the buttons on an old-fashioned car radio, so choosing one un-sets all the others with the same name. Since all you can do with the buttons is click on one of them, the "value=" part of the tag says what result is sent back for each button.

The next field is another text field but this time it includes a value as well, which will appear on the form already filled in. Although it can be changed, it does save people typing common values all the time.

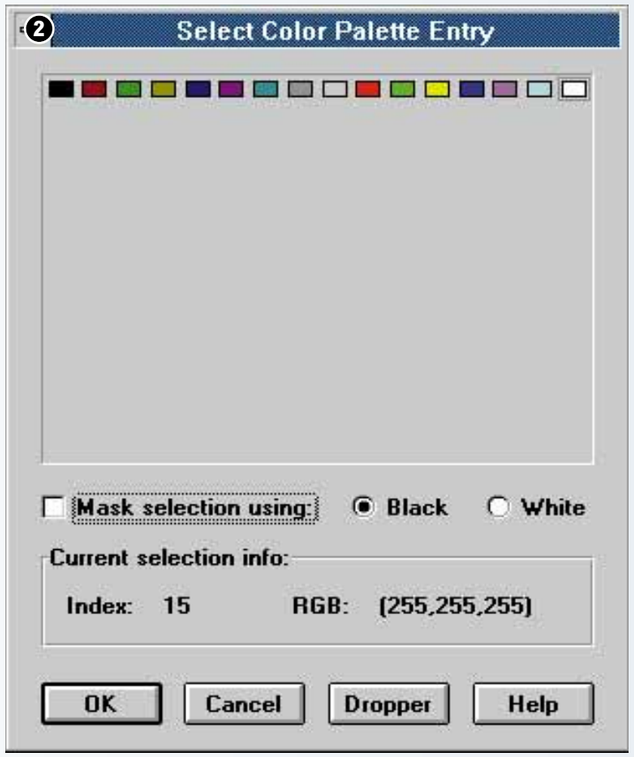
Finally, there's a special type of field, called "submit", which puts a button on the screen. When it's pressed, the completed form is sent to the Web server. Normally the button is labelled Submit, but in this case we've used the value option to change it to something more friendly.

There are plenty of other types of field that can be used, like drop-down menus, and text areas; the complete list is in the table "HTML for forms and extended tags" (page 232). They all work in the same way, though, so once you've mastered one you should be able to manage plenty of others.

## Walkthrough: creating a transparent GIF


**Fig 1** *When you've loaded the picture into Lview, select the Options menu and then choose Background colour. If you don't have a copy of Lview, you can download it from ftp.demon.co.uk, in the simtel/win3/graphics directory*

**Fig 2** *Select the colour that you want to use as a background and then click on "OK" to return to the main screen*



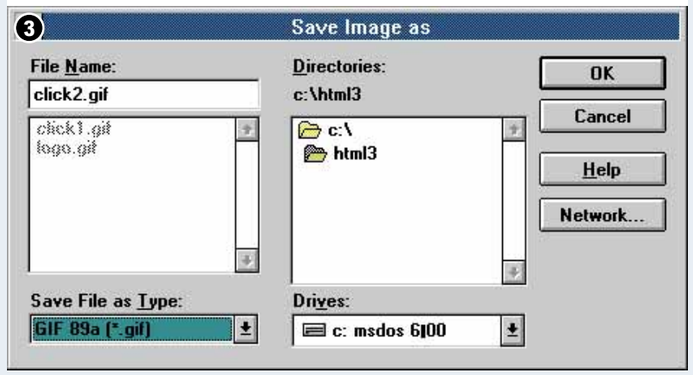
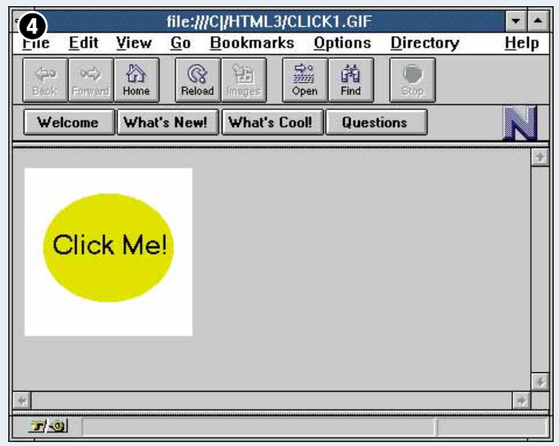




**Fig 3** *When you save the image, you must make sure that you save it in GIF89a format, rather than any of the other options. If you don't, the background colour won't appear to be transparent*

**Fig 4** *This is what you'd see in NetScape if you used the original image — it's certainly not the most elegant way to put buttons on your pages*



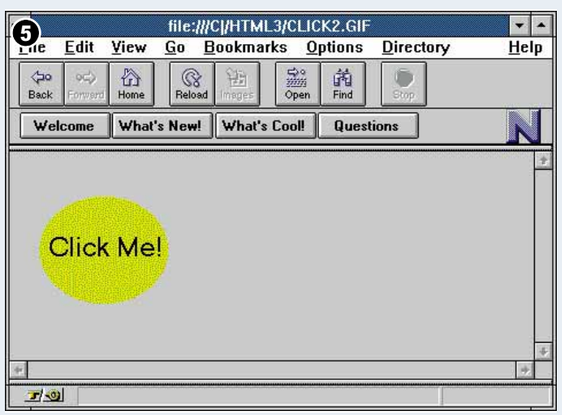




**Fig 5** *And this is the transparent version, but remember that if you make it into a link, you'll still see the outline of the image*

## HTML for forms and extended tags

**Here's a summary of the tags you'll need to use for creating forms on your Web pages, plus some of the common extensions to HTML that will be supported by a range of browsers:**

### Form tags

| | |
|---|---|
| ● `<form method=post action="URL">` | Define a form, the data from which will be passed to URL, which should be a script when the form is completed. "Method" can also be set to "get", but post is recommended (*see main text for details*). |
| ● `</form>` | End of form definition. Multiple forms can be present on a single page. |
| ● `<input name="var_1">` or `<input name="var_1" type="text">` | Define a text entry field, the result of which will be stored in a variable called var_1. |
| ● `<input name="var_2" value="default">` | A text field, stored in var_2, with a default value of "default". |
| ● `<input name="var_3" type="radio" value="val_1">` | Define a radio button, with results stored in var_3. This button will return the value "val_1". You can have as many tags as you like with the same name, but with different values, and only one can be selected. |
| ● `<input name="var_4 type="password">` | A text entry field, but the value typed in will not be displayed on the screen. |
| ● `<input name="var_5" type="checkbox">` | A simple checkbox which will set var_5 to either "on" or "off" depending on whether or not it's been checked. |

Fields of the type "password" and "text" can have an additional option, "size=", which limits the number of characters that can be displayed in the field to that specified. The "maxlength=" option specified the maximum number of characters than can be entered.

| | |
|---|---|
| ● `<select name="var_6"> ... </select>` | Define a drop down list of options. Each option appears within the select tags. |
| ● `<option>Option 1` | An option for a drop down selection list. The text "Option 1" will appear on the list. |
| ● `<option selected>Option 2` | A pre-selected option on a drop down list. |
| ● `<textarea name="var_6" rows=10 cols =30>...</textarea>` | Define a space for entering a large amount of text, to be stored in var_6. The area will be ten rows (line) by 30 columns, although the text can be longer. Default text can appear between the start and end tags. |
| ● `<input type="submit">` | A button to submit the completed form to the Web server. If a "value=" section is included, it will be used to label the button, which would otherwise say "Submit". |
| ● `<input type="reset">` | A button to reset the form, as if you had just loaded the page. The button will normally be labelled "Reset" unless the "value=" section is included. |

### Extensions to existing tags

| | |
|---|---|
| ● `<body background="bg.gif">` | Use the file bg.gif as a background to the current document. |
| ● `<img width=72 height=72>` | Specify the width and height of an image in a document. |

### Processing forms

If you've used the alternative "get" method of processing forms, there are a few programs that might be available on your Web server to help you process the information in QUERY_STRING. The most useful is called cgiparse and is part of the CERN Web server software. This is how you'd call it from a Unix shell script (one of the most popular languages for writing server scripts):

```
form-name=`cgiparse -value name`
```

The variable on the left, "form-name", will be set to the value following "name=" in the query string returned by your browser. You can call cgiparse as many times as you like to extract all the information you need from the results of the form. There are some other functions too: the administrator of your server should be able to tell you more about it, and what other programs are provided to help manage your scripts.

Scripts that are called using the post method have to read all the information from the form at the beginning; the CONTENT_LENGTH variable is set by the Web server to say how much information there is to read. Unfortunately, the details of how you read the information will be different depending on whether you write your scripts in C, Unix shell scripts, Visual Basic or Perl. If you're programming in Perl, a good example of how to do it is the form-mail.pl script.

### Back to basics

One of the first principles of HTML is that it's not a descriptive language: you can't say that things should appear in a particular font, or a particular size. Nevertheless, new generations of browsers can help to make it far easier to ensure that things look much as you intended, and to make pages look much more interesting than merely text on a standard grey or white background.

The most common way of adding a little interest to your document is by using transparent images; programs like Lview for Windows and GraphicConvertor on the Macintosh allow you to select one of the colours in your picture and set it to be transparent. Usually the background colour is made clear, so that an image appears to be floating. For instance, if you were to create a picture of a globe to use as a button it would usually be sitting in a square or rectangle of white. By making the white transparent, all that people will see when they look at your page is the globe, sitting on the background of the page.

Another way of spicing things up is by using background images for your pages — but remember that if you use a bright or complicated picture, it might be hard to read the words in front of them. Not all browsers support background images, but they do work with NetScape, NetShark, Emissary and WebExplorer.

Background images can be GIF or

## Handy Hints

Turning your words into HTML is the easy part of creating Web pages. Follow these hints to help save time designing your pages and make sure that they're easy for people to read.

• Work out what you want to do first. If you're going to have more than one page with links between them, draw a diagram so you can see which ones should be linked, otherwise you'll end up with a confusing maze of pages.

• Make your first page short and simple. People don't want to have to wait ages to download a large home page. Have a quick summary and some links to other information on more pages.

• Don't overdo the graphics. Pictures are very nice, but they take time and money to download. If you must have lots of them, make them small and make sure you use "alt" text for people who don't download the pictures.

• Don't use too many headings. If you have lots, it'll be hard for people to read the text.

• Try to avoid using special features that rely on people using a particular Web browser. They may not work at all if people use a different program to read your pages.

• If you have a long document, break it up into sections and make a miniature index so that people can jump to anchors at useful points.

• When you give the names of files in links or "img" tags, don't give the full path; just say where they are relative to the file that you're reading, so they'll still work if everything is moved to another drive or directory.

• Always remember to use Unix-style forward slashes "/" in file paths, rather than DOS-style backslashes.

• If you're using Netscape to view pages, you can drag your HTML file into the Netscape window to view it.

• Save HTML files with the ".htm" extension on a Windows system, or with a name that ends in ".html" on a Macintosh — some Web browsers and servers prefer files to have names that end that way.

JPEG format files (most browsers that support backgrounds also support JPEGS) and you add them to your document with an extension to the BODY command, like this:

```
<body background="bg-pic.gif">
```

If the image is too small to fill the window, it will be tiled to fill the whole area, so you can make it quicker to view the page by having a small background image that can be downloaded quickly and then tiled by the browser. Background images can work with transparent images too, so you'll be able to see the background through the clear sections of other images.

Of course, not everyone browses the Web with images turned on, so you might find that the layout you carefully designed, with pictures in mind, looks strange when they're not loaded and all that's displayed is the "missing picture" icon. Some browsers, including NetScape, allow you to specify the size of a picture in the <img> tag, so even if you don't load the picture you'll see a blank space of the appropriate size. This is what the extended tag looks like:

```
<img src="pic.gif" alt="Alternative
text" width=288 height=288>
```

Many of the new extensions to HTML have come from NetScape and you can find more details about them by selecting "Help on creating Web services" from the Help menu. But remember; if you rely on too many of them, you might find that other people are unable to make much sense of your pages.

There's lots more you can do with your Web pages than we have space for here (some involve complicated scripts and programs to produce special effects), but you should now possess enough knowledge to be able to create pages that include backgrounds, forms and other special effects. In a future issue, we hope to be able to look at the more advanced features, including the new version (3.0) of HTML which will be supported by lots of browsers. Until then, good luck!

### PCW Contacts

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Innovations

# Talking about transmission

**Automation-driven video servers seem to be the last piece in the jigsaw to make multi-channel satellite TV commercially viable. Tim Frost reports.**

With the development of digital TV transmission which squeezes in ten television channels where there used to be one, the capacity will exist for 3,000 or more satellite channels by the beginning of the next century. While the TV industry sees this as a great opportunity, there are some reservations. Not about the quality of programming — that will continue on a downward trend with lower and lower budgets. The real worry is about overall cost.

More stations means more specialised channels. While these will have viewers who are less fickle, there will also be fewer per channel, which means the income from either subscriptions or advertisement revenue will be marginal.

To make a living out of the system, TV channel operators must reduce costs at every stage. The availability of high-quality low-cost cameras and production equipment has already helped reduce programming costs: where a major TV drama might cost up to £0.5million an hour to produce, satellite program costings can be as low £10,000 an hour.

At the other end of the chain there is the transmission system itself. Seven years ago, when Sky was launched, renting a satellite transponder would set you back several million pounds a year. Now, a digital channel on a transponder will cost as little as £100,000 a year, so the hardware cost is being squeezed out of that part of the system, too.

## Tapes flying around

That leaves only the bit in the middle; the systems which store and play out the programmes and commercials. This has proved rather more complex to solve. Traditionally, TV stations use a jukebox of video carts with computer-controlled robot arms that pull the right tape from its storage slot and slip it into a VTR at just the right time for playing the ad break, or programme, out to air. This is fine when you have only one channel to consider, but it doesn't really translate into a workable system for a ten or 20-TV channel operation.

For a start, there's not much in the way of cost savings: if you have more channels you need more VTRs, which are each around the price of a small house; and then you need more people to operate them. And having all those tapes flying about doesn't exactly increase confidence in the system's reliability or its foolproof-ness in making sure the right programme, or advertisement, transmits at the right time and on the right channel.

The solution everyone is now considering is the video server, like the Tektronix Profiles/Drake automation system that BSkyB is putting in to replace the play-out systems for its existing satellite channels. Not, it should be noted, in preparation for a move to digital, about which BSkyB is remaining tight-lipped. And no doubt will remain so until consumer decoders come onto the market.

## Robot jukebox

The video server bears a passing resemblance to a PC server since it is, in fact, a 486/66 PC with four 4.2Gb drives and fitted with professional video encoder/decoder cards which can deliver four separate TV channels simultaneously. The server is used as a large buffer between the robot jukebox system and the satellite up-link. All the ads and programmes are stored on the jukebox, fed into the video server an hour or so before they need to be transmitted, and stored using motion JPEG giving around 4:1 data compression. The server stores and compiles the programs and commercials ready for play-out to the four channels.

There are further advantages, since commercials and program previews common to all four channels being supplied by the server have only to be stored once — the system plays them out to any of the channels, at any time. Tektronix notes that one of the advantages of having only four channels per server rather than 20 (which is possible on larger servers) is that there is no chance of accidentally programming the wrong ad or programme into the wrong channel. This could be extremely embarrassing if the two channels concerned were a cartoon and an adult channel.

The system doesn't necessarily need to be feeding four traditional channels. Using the same total disk storage, the server can hold a complete movie and start playing it out every half hour for four channels of near-Video on Demand.

Although the video server is less expensive than the VTR, the main advantage is that the amount of space and the number of engineers needed to run a multi-channel transmission system can be considerably reduced. The right automation system will not only load the programmes and ads but also monitor the output of the system to check that everything is going out okay, so reducing the workload on the engineers. With quotes of a 10:1 reduction in cost of transmission systems per TV channel, automation-driven video servers seem to be the last piece in the jigsaw to make multi-channel satellite TV really commercially viable. Isn't that comforting?

CUTTING EDGE

Horizons

# One in every home

**Current phone line technology and charging structures are holding back the day when every home with a phone line could have permanent access to the Internet.**
**Simon Rockman makes the connection.**

One of the most popular pastimes for the dedicated Internet addict is iPhone, which allows you to connect a microphone and speaker to a computer, digitise the speech and send it across the Internet using conventional phone lines. This is crazy: the sound quality is appalling and the lines you are using were originally designed for speech, not computer data.

The existing systems owe a great deal to Alexander Graham Bell who had no idea that the telephone would be such a hit, let alone that it would encompass half the world. It's this technology we are using today and which is outmoded.

### No need to share

If you have a phone line in your house, you could have a direct line to the Internet. The UK, and most of the civilised world, is so rich in telecommunications there is no need for you to share the lines in your street with your neighbours. It's all down to charging. The telephone companies like a system whereby they get more money every time you pick up the phone. When you are not using it, the lines are idle. If the phone companies were to charge you for *having* a line rather than *using* it, they would make less money — but the demands on the network would be no greater. As competition within the telecommunications industries grows, the concept of charging against cost and not what the market will bear will gain importance. We may well all end up with a line which gives us permanent access to the Internet. Every home could be on the Internet and this would have two great advantages: higher speeds and a permanent connection.

The first step is ISDN. This gives two 64Kb/sec lines over a single pair of wires although the phone companies charge as separate lines with separate numbers. In the short term, ISDN is the future for communications: it's fast and has a very quick set-up time, but it isn't permanent and is still charged on a usage basis.

The proposed CONTEXT system only charges by the month, so you could dial into an Internet service provider and stay connected.

The quick set-up time of ISDN means this would have only a slight advantage over merely making the call, for each packet sent. Effectively, ISDN could become a leased line into the home. An intermediate system would use one 64Kb line for a permanent connection and then switch in the second 64Kb when necessary. The technology to do this exists today; it's just a matter of charging, and BT's ability to cope with the demand, which holds it back.

When BT cut the price of ISDN lines from £400 to £200 as an experiment, it was unable to cope with demand and ran out of the plastic connection boxes. The experiment was such a success, the price was raised again, back to £400. But now, it's down to £300. Since most of the network runs as ISDN, extra equipment is needed to cope with normal analogue lines. It would be cheaper at the exchange to put ISDN into every home.

Although ISDN remains a dial-up service, there are other options for permanent lines. Again, given the capacity of the systems this need not be expensive, yet in fact it is.

The best kept secret is baseband, a permanent connection between two sites on the same exchange — in theory, just two wires running from one place to another using BT's conduits. If the first place is your home and the second is your Internet service provider, you can have a leased line at the fraction of the standard cost.

There are some problems, however. The first is that it's physically limited by the length of the wires; eight kilometres is a reasonable maximum. The second limitation is that both locations need to be on the same phone exchange: once switching becomes involved, it's no longer a baseband system. Beyond that, you have a pair of wires to do what you like with. BT will try to persuade you that the line needs conditioning and that will cut the speed to 9,600bps, but this is just an incentive to use a more expensive system.

Ethernet at 100Mbits/sec runs over two wires, so 2Mbits/sec is possible over short lines in the ground. All you need is the right equipment at each end, the right equipment being a bridge or router. This will cost you £2,000 at each end.

You might be prepared to spend that kind of money for your permanent connection, but it's unlikely that you will find an Internet service provider prepared to spend similar money on your behalf. It's a shame, since with nearly 300 local numbers, companies like Demon Internet could provide discount access.

### Making it permanent

Instead, you will have to do it properly. A single 64Kb leased line, called Kilostream by BT, provides a permanent line. This gives you a simple box on the wall, but if you want more lines BT will want to install fibre.

This goes all the way up to 32 lines, each of 64Kb, known as an E1 line which can deliver 2Mbits/sec. The E numbers are the European standard. In the US, lines are sold in multiples of 56Kbits/sec, with the much talked about T1 offering 1.5Mbits/sec. This is the kind of line which will be used by a large corporation and shared among a number of users: just the cabinet costs £2,000 and is 6ft high. But with the advent of cable communications and improvements in technology, 2Mbits/sec into the home will become possible and we'll all wonder how we coped with anything as unreliable as dialling in to get our email and as slow as 28,800bps.

Bluesky

# Shoes that think?

**PJ Fisher looks at MIT's plans for the home computer with a difference.**

What with Larry Ellison's vision and IBM's supposedly imminent network devices it seems that the humble desktop PC has had its day. Whatever the outcome (see *Net Opinion*, page 224), the people at the Massachusetts Institute of Technology (MIT) think that this is just the start. They are seriously looking at turning clothing, shoes, carpets and other everyday items into network devices with powerful computing power.

Sounds far-fetched, but a group within the MIT Media Lab is deadly serious about the idea.

## Electric underware

This group believes that the clothes we wear, the chairs we sit on and carpets we walk on are being wasted as inanimate devices. Traditional hardware and software should merge into "underware" with, for example, your shoes retrieving personalised news from the carpet. This could then be displayed through a pair of intelligent spectacles. In short the group believes in "Things That Think" — an appropriate name for this newly-formed research group.

The research programme is set to take three different layers of research. The lowest layer will look at the physical design of smart things, to create a range of technologies which will embed intelligent sensing and computing into everyday household objects. The middle layer will deal with the software that will enable these objects to link together. The top level will solve the need for these devices to learn about the world, anticipating the wearer's needs.

And if you still think this is the stuff of silicon dreams, the MIT initiative has already received backing from sponsors including furniture makers, telecom equipment manufacturers — even theme park owners. Those interested in the research include Motorola, Timex, Sony and General Magic.

An example of the life-enhancing technology under discussion is a coffee maker that can sense where your mug is, determine whether it is getting cold or becoming empty and, if you often drink two cups, start brewing another. To do this, MIT is talking about "active electromagnetic interrogation of passive structures": making coffee cups active carriers of information that can be read by other devices, such as the filter coffee machine of the future.

Nice for coffee lovers, but more interesting is the group's plan to turn people into Personal Area Networks (PANs?) which would allow a computer in a shoe to use a wristwatch as a display transferring data to another shoe computer via a handshake. This links with research also being undertaken at MIT into a so-called BodyNet, which would link people through external devices. For example, room temperatures could be set not by a dumb thermostat, but by reading the body temperature of the people, or person, in that room (although the researchers make no allowance for people's individual preferences).

The BodyNet system would use a language called BodyTalk, which would interface in a similar way to PostScript, across different output devices. The key to PostScript is platform independence. The key to BodyTalk would be its object independence. BodyTalk devices would be controlled by, as well as interpreting, the BodyNet protocols. BodyTalk is being designed to reflect the way in which we communicate with each other; through speech, gestures and images.

## Watts as you walk

MIT also wants to usher in an age where technological boxes don't end up cluttering our living spaces. We all know the feeling. Every time we buy a new device; CD player, TV, VCR, we get another remote control to play with. MIT, through its school of architecture and lab for computer science, is working on a living room of the future — uncluttered by gadgets but still able to provide superb sound and vision. Preferably without wires. Once again the concept of a BodyNet comes in, powered by the watts created as you walk, to integrate with our entertainment systems.

MIT recognises that the emergence of PDAs and (possibly) network devices represent the first shift away from the desktop, but it believes that this is just the beginning.

But MIT is realistic enough to realise that this electronic nirvana is unlikely to move beyond the theoretical stage unless a common protocol for communication is established. MIT is working on this with its Universal Transponder Code for devices, and Universal Body Code for people. MIT believes that it is absurd for us to have a wealth of potentially powerful devices around us (cellphones, PCs, laptops, PDAs) none of which can talk to each other, except in a rudimentary way.

The idea of intelligent devices everywhere in our homes may seem a scary prospect to some, but device protocols would have to become highly advanced indeed to prevent your coffee cup turning on the hi-fi, or the oven, for instance. This could be a future that may well benefit us all. It would certainly be far removed from pedantic arguments about operating systems and applications and for once would actually look at a way of harnessing computer power to make our lives easier — and more intriguing.

Retro

# Cheap and Cheerful

**Perhaps more than any home computer before or since, the ZX81 captured the popular imagination. Simon Rockman asks why such a basic machine had such immense appeal.**

One of the most famous *PCW* covers shows a chimpanzee with a Sinclair ZX81. The review was written by David Tebbutt, the editor, but he was on holiday when the cover went to press.

The machine was very special, better and cheaper than the ZX80, and it became the first computer for a huge number of people. The basic machine with 1Kb of RAM cost £69.95 built (although the reviewer was told £79.95) or £49.95 as a kit with an extra 16Kb of RAM for £49.95. It was fiercely competitive, partly because it was only available by mail order. The review ran in the June 1981 issue of *PCW* but, as usual, there were huge delays before they arrived to warm the desks of users' bedrooms.

The computer had to be plugged in to a TV for the display and a cassette recorder to save (and sometimes load) programs. In a smart, black, plastic case the ZX81 looked a little less toy-like than the ZX80 despite being lighter at 13oz.

Clive Sinclair's baby had an 8Kb Basic ROM and keywords were entered using a single keypress — although finding that key with up to five functions on each key could take as long as typing the word would have done. The machine was monochrome with a display of 32 characters by 24 lines with the bottom two reserved for system messages and editing programs. Low-resolution graphics were provided to give 64 x 44 plotting points. The 16Kb RAM pack was fitted to the edge connector: several members of the current *PCW* team find the memory of the wobbling RAM pack quite distressing.


Five screws held the ZX81 together, three of them hidden under footpads. Unlike the ZX80 the keyboard was separate from the PCB (the original used contacts on the PCB to make the keys work). Tebbutt thought the matt finish of the keys superior to the gloss of the ZX80.

One of the reasons the ZX81 was so cheap was its simplicity. There were only four chips: ROM, a 3.5MHz Z80A CPU and a 1Kb memory chip. This must have appealed to home builders keen to save the extra £20.

The addition of floating-point mathematics made the ZX81 something special: an upgrade ROM was available for ZX80 owners, but there were some disadvantages. The *PCW* benchmarks revealed the new machine to be substantially slower.

The initial review quite liked the manual, although a subsequent reader's letter revealed a number of errors.

Also new, and unavailable, was the ZX Printer. This produced aluminium foil listings which were just about suitable for debugging programs, but their dark-grey-on-silver output made them unsuitable for sending to anyone — at least not anyone you wanted to impress. The smell of the electrostatic printer was interesting, to say the least.

It wasn't really practical to use a ZX81 for any real work, although quite a few were gainfully employed. It was an enthusiast's computer, so most of the hundreds of thousands of people who bought it wanted to program with the built-in Basic, which by later standards seems crude.

This was the machine which shone in the golden age of home computing. It may not have been useful like today's computers or elegant like a BBC Micro; even the games were barely playable and a far cry from the greats on the VIC 20. But it was a machine which, more than others, got micros into the home. A generation grew up learning how to program. David Tebbutt was spot on when he wrote: "If you know nothing about computers and you want to enjoy finding out about them, this machine offers a value-for-money way of doing just that. Children will love the ZX81, there can be no question about that, and I suspect that more than a few people who are already familiar with computers will buy one, just to have some fun." A knighthood was eventually bestowed on Clive Sinclair.

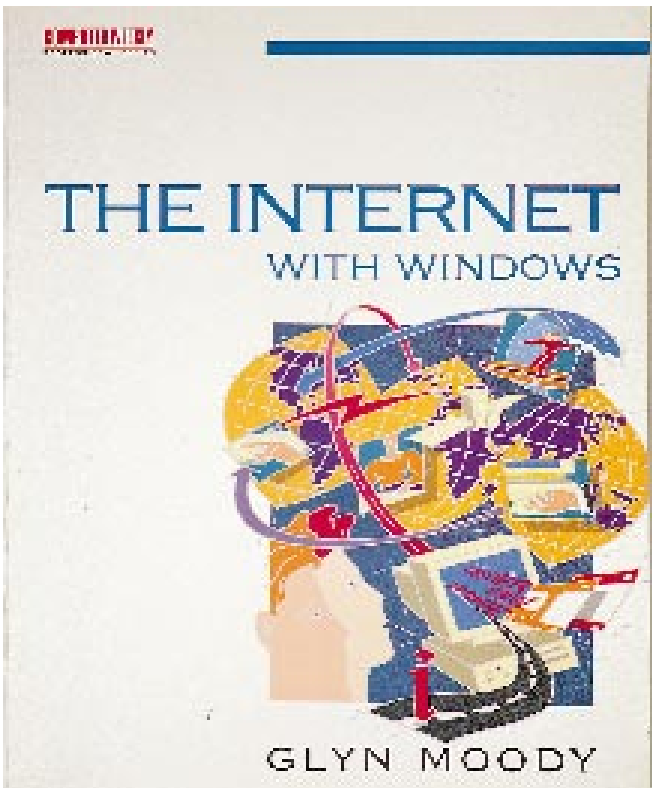
# BOOKS

**Have laptop, will travel. If you fancy yourself as a hybrid between Bill Gates and Alan Whicker, then here's where the electronic globetrotting begins. Ben Tisdall, PJ Fisher and Simon Rockman bring you the mother of all markup languages, too, plus a guide to the Internet for Windows.**

### The Internet with Windows

It's a brave author who's prepared to toss yet another Internet book into the ocean that already exists. But Internet with Windows has a couple of USPs (Unique Selling Points) going for it. One, the fact that it's written by a Brit, the other that it's almost bang up-to-date and includes coverage of the fearsome Windows 95 TC/PIP settings. Windows 95 is easier to use and more intuitive than Windows 3x except when you try to connect to the Internet.

I wrote "almost up to date" advisedly. I looked up what I reckon to be four of the hottest Internet topics of the last couple of months: Hot Java, Macromedia's ShockWave, the relaunch of Microsoft Network and America Online's recent launch in the UK. America Online and Java get a couple of paragraphs. Shockwave missed the deadline as did the latest Microsoft Network developments. Still that needn't be a problem because this book will help you get onto the Net, and once online it's easy to surf your way to the latest stuff on the aforementioned topics.




The book is meant to be read from beginning to end but I don't suppose many people will wade through all 642 pages, as it's sufficiently well-organised and indexed for readers to dip into. There are 26 chapters in all. All the obvious topics are covered: ftp, Telnet and Archie each get a chapter, but there are also sections on the history and structure of the Internet, business on the Internet and Internet culture. Extensive appendices on service providers, modems and comms and step-by-step ftp and a glossary complete a comprehensive package. If you're determined to buy just one Internet book, make it this one.

**The Internet with Windows**
**Author** Glyn Moody
**Publisher** Butterworth Heinemann
**Price** £19.99
**ISBN** 0-7506-2099-4
**Rating** ✎✎✎✎✎

### BCD...SGML A User's Guide To Structured Information

The World Wide Web has made a basic understanding of HTML essential for anyone who wishes to put information onto the Internet. As many now know, HTML is the system of DTDs (Document Type Definitions) that Web browsers must parse in order to display text and graphics on any computer platform.

What's less well known is that HTML is a subset of a far richer DTD set known as SGML (Standard Generalised Markup Language) which has been around for at least 25 years and came from a desire by publishers to overcome the ASCII limitations of computer-based typesetting systems.

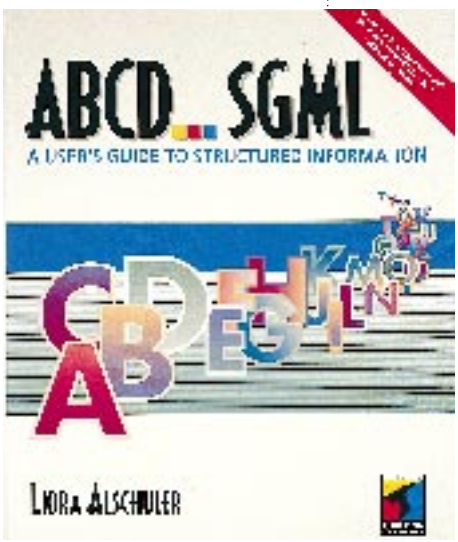
HTML is basically a hypertext resource that allows documents on the Web to link with others. Despite having been pushed to the limits by extensions from Netscape and other vendors, its graphical and textual capabilities are limited. Some of these will be enshrined in the HTML 3.0 ISO standard.

The popularity of HTML has now brought its parent out of the shadows and people are discovering its power as a tool for distributing technical documentation online, with links not just to the Web but to other SGML documents, and complex links to appendices and indexes. SGML has database publishing capabilities that are way beyond the scope of HTML on its own.

But SGML remains daunting to many people. Liora Alschuler's fine book should serve well those who wish to begin investigating SGML as a

means to publishing on the Web and online. It provides a comprehensive history of SGML and explains in clear terms exactly what it is, how it works and why your organisation may need it.

But this is no intense manual on learning SGML or how to "create great looking documents". Instead, it makes you understand SGML's potential. True to the academic roots of SGML, it is an elegant and, at times, cerebral read which makes you think about the concepts of information dissemination and publishing. For those that want to go further, there are




enough resources and pointers to learn SGML for yourself.

An enclosed disk includes a copy of SoftQuad's Panorama Free SGML browser, which works in conjunction with Netscape to view SGML documents held on the Web or the floppy itself. So after digesting SGML you can see it in action for yourself. Recommended.

**BCD...SGML A User's Guide To Structured Information**
**Author** Liora Alschuler
**Publisher** Thomson Computer Press
**Price** £29.50
**ISBN** 0-395-71133-9
**Pages** 414
**Rating** ✎✎✎✎✎

**Travels with a Laptop**

Regular readers of Michael Hewitt's column in *PCW* will know that he's been all over the world with his laptop. He's Internetted from Iceland and called Cix from Cuba.

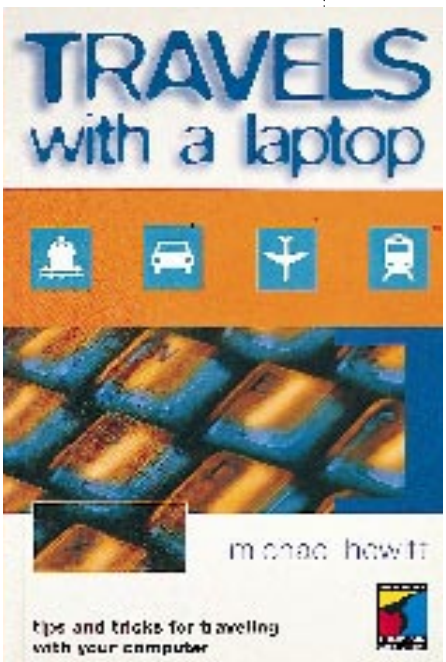
Travels with a Laptop is an easy-to-read guide to using your modem in foreign climes. Hewitt warns you of countries where you'll need to format your hard disk before passing through customs, and that modems are illegal in Syria where all international calls are monitored.

In preparation for your visit there is a handy guide to the phone plugs of the world, in which the author advises you to photocopy and fax through to the hotel you will be visiting. However, it might be a little unwise to alert some hotels to your intentions, since if they can't help, you might find yourself resorting to some of the more aggressive techniques described in the book. These rely on moving furniture to find hidden sockets, taking phones apart and attacking the wires with a screwdriver.

This is a book which should carry a red triangle: a lot of the practices described are either illegal or contravene FCC or BT rules, the rest are generally frowned upon. Hewitt's cavalier attitude to the jobsworth in a boiler suit is mitigated by the fact that no-one really cares anyway.

However much you think you know about logging in from strange places, you are bound to learn something here. In an attempt to make the book less technical, there is a little glossing over. And there are some concessions to an America readership in an attempt to widen the books appeal beyond the UK.

In some ways, it casts its net too wide: looking at the advantages of different computers, for instance and it's rightly acknowledged that this




information will date quickly.

The information on the software and service provision aspects of using a notebook while travelling isn't as good as that on getting your modem working, but then there are plenty of sources of information when it comes to using comms software. A few of these will tell you how to work out which wires to use to connect up your modem. The book advises that you take a copy with you when you travel abroad.

Heed that advice. At least you'll have something entertaining to read after the authorities have arrest you for meddling with the telephone in your hotel bedroom.

**Travels with a Laptop**
**Author** Michael Hewitt
**Publisher** International Thomson
**ISBN** 1-85032-164-7
**Price** £9.95
**Pages** 196
**Rating** ✎✎✎✎✎

## Top Ten Books: March 1996

| | | | |
|---|---|---|---|
| 1 | Web Page Design Cookbook (Book/CD-ROM) | Wiley | £22.50 |
| 2 | Delphi How-To (Book/CD-ROM) | Waite Group | £36.50 |
| 3 | Teach Yourself Web Publishing with HTML in 14 Days (Book/CD-ROM) | Sams.net | £37.50 |
| 4 | Java! (Book/CD-ROM) | New Riders | £32.99 |
| 5 | New Internet Navigator | Wiley | £15.95 |
| 6 | World Wide Web Marketing | Wiley | £15.95 |
| 7 | Microsoft Windows 95 Resource Kit (Book/CD-ROM) | Microsoft Press | £46.99 |
| 8 | Windows NT Server Professional Reference | New Riders | £50.99 |
| 9 | Teach Yourself Database Programming with Delphi (Book/CD-ROM) | Sams | £37.50 |
| 10 | OLE Controls Inside Out (Book/CD-ROM) | Microsoft Press ` | £37.49 |

List supplied by The PC Bookshop, 11 & 12 Sicilian Avenue, London WC1A 2QH
Tel: 0171 831 0022. Fax: 0171 831 0443

# Kids' STUFF

**Although stricken with the worst cold in the history of civilisation, Paul Begg has joined daughter Siobán in search of opals in the Australian outback, stood beside Nelson at Trafalgar and Columbus in the New World, taken a bus into the depths of the ocean and made some paper planes. We can merely stand in awe.**

Lying in bed, coughing, spluttering, starting on a new box of tissues and sadly resolved to the fact that nobody ever gets colds as bad as mine, I flicked idly through some press releases. I reflected on the fact that children's software — and children in general — have come to dominate the computer world. Kids' stuff is big business, as the Christmas TV ad campaigns will have reassured you. Intel, Hewlett-Packard (for its DeskJet 600 and 600C — very good printers, by the way) and some Disney software are just a few examples, and I particularly recall Microsoft's ads for The Magic School Bus Explores The Ocean, which is reviewed below.

The press releases, telling of product launches and company mergers, reinforced this view. Key among them is the scrapped merger between The Learning Company and Broderbund Software. The Learning Company will now merge with Kidsco Inc, a wholly-owned subsidiary of SoftKey. The transaction, which will have a total value of approximately $606 million, will make SoftKey the largest educational software company in the world. The deal brings with it an agreement between SoftKey and its largest shareholder, the Tribune Company, to merge Tribune's Compton's New Media with SoftKey.

Yet more evidence comes from Plymouth-based software distributor Guildsoft. Guildsoft has tended to select and distribute innovative software that could either go like a rocket or die a death. The company has now launched a new range of branded software titles — that's software carrying the Guildsoft logo — with six titles aimed at the kids market. There are four edutainment titles and two games. The games are The Adventures of Down Under Dan and Kingdom at War.

### The Adventures of Down Under Dan

Dan is a down-at-heel bush pilot; the only bit of his plane he hasn't put in hock is the air in the tyres. With the bank closing in, Dan is willing to try just about anything, even setting off into the deadly Outback in search of opals. There's nothing to it — all you have to do is pick them up. Well, it isn't that simple. Dan — or rather you, because you are responsible for making all Dan's decisions — has to use all his wits just to survive: Crocodile Dundee he ain't. As you'll have gathered, this is a fairly complex puzzle game and there are some excellent photographic backgrounds to add realism to the settings.

### Kingdom at War

Years ago on a Friday night, a friend and I used to play the war strategy board game Risk!. Okay, it wasn't the most exciting way to spend Friday nights, but I'm talking about the days of rented flats, when spaghetti was always the evening meal, and money was something other people had. Come to think of it, what's changed? Anyway, Kingdom at War is a Risk!-like strategy game set in medieval times of sword and sorcery. Up to six people can play against each other or against the computer. So if you fancy suiting up in armour, capturing towns and cities and maybe uniting the land under your benevolent rule, this is the game for you.


Make me a World encourages children to make their own toys, away from the computer

### The Adventures of Busy Billy/Things for Kids/ Treasure Hunt

The education titles are The Adventures of Busy Billy and Things for Kids, which fall in the age group 3-10/12 (although expecting them to appeal to 12-year-olds seems optimistic). Treasure Hunt and Make Me A World are for 5-10 year olds. Busy Billy contains two interactive animated stories in which

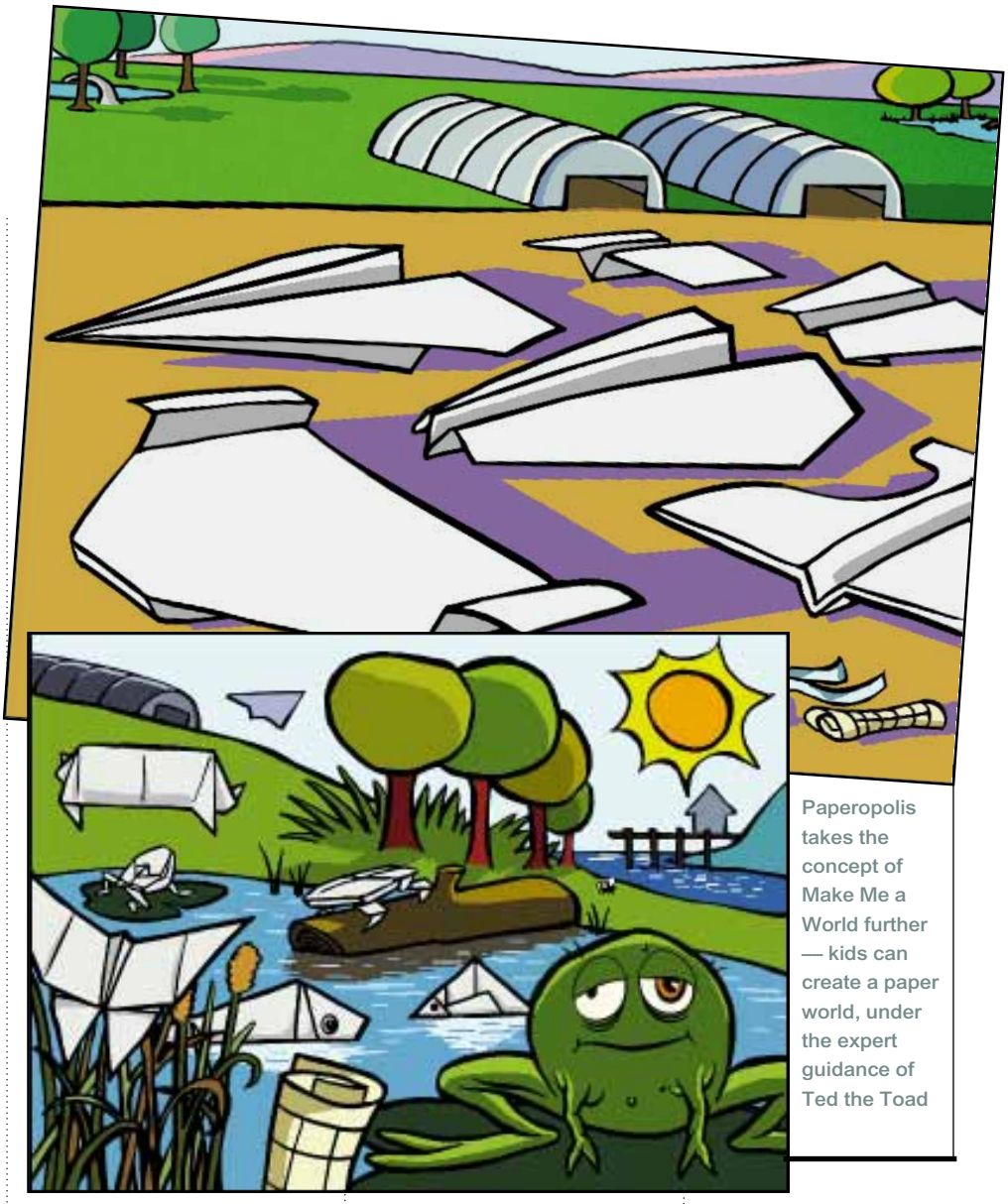
clicking on an on-screen icon makes Billy act in a related way. For example, if you want Billy to open a door, click on the key icon. In this way, children help Billy solve problems and overcome challenges. There are some additional puzzle games, such as a jigsaw, and your child can even make some new, simple adventures. Things For Kids is a value pack of eight programs for composing music, drawing pictures and colouring.

**Make Me a World**

Treasure Hunt is also rather optimistically pitched at the higher age range, but will appeal to young children. You discover a treasure map and set off to find the treasure. Perhaps the best of all these titles is Make Me a World. I like software that encourages children to do things away from the computer and Make Me a World is a prime example. It's really a computer version of those cut-out books you used to be able to buy — you'd cut around the dotted lines and then fold and tuck bits together, glueing here and there to create a 3D model. This works on the same principles: you simply select the picture you want, print it out (either pre-coloured or in black-and-white for your child to colour), and away from the computer your child can learn to use scissors, fold and tuck, glue, crayon and paint to create a variety of paper objects. It's a great package to have to hand when you've got several young children or a small playgroup to keep occupied.

**Paperopolis**

If you find the concept of Make Me a World appealing, try to take a look at Paperopolis from Virgin Sound and Vision. It provides complete instructions for making over 600 paper toys including boats, planes, flowers and animals. All you have to do is choose what you want to make, print it out, and just follow the instructions. Kids will love Ted the Toad, the guide, whose wisecracking lasts over 50 minutes. Make Me A World and Paperopolis may prove the fallacy of the paperless office, but together with a ream of fairly thick paper, they could be the answer to bored kids.



Paperopolis takes the concept of Make Me a World further — kids can create a paper world, under the expert guidance of Ted the Toad

**How Would You Survive?**

Grolier's latest offering How Would You Survive? is a little more serious. This is a teaching package with a twist: it includes a knowledge-testing game in which you can find out how well you'd survive in the past and all over the world. How Would You Survive? takes in Egyptian, Viking and Aztec societies. Find out about the buildings people lived in, what their craftsmen made, how they travelled and traded and what life was like for children. How Would You Survive? has over 140 movies, animations, maps and sound effects.

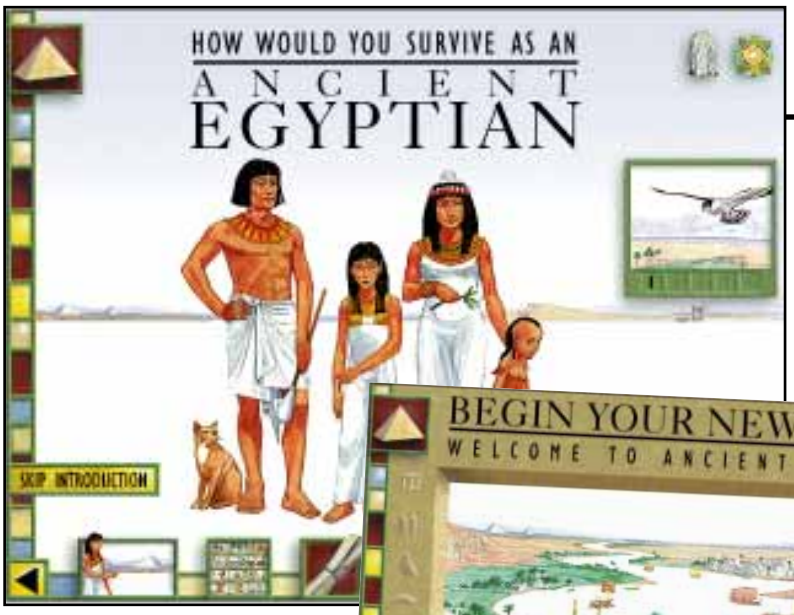
Explorers of the New World lets you follow in the wake of Columbus, Magellan and Cortes as they explored the Americas. Detailed maps, photo-realistic backgrounds and historically accurate video recreations combine to bring these explorers and adventurers alive. There's also a database of over 60 more explorers of the New World from 1450-1600. Sadly it doesn't include the Vikings, but this is still a solidly good CD-ROM.

**Anglia Multimedia — new titles**

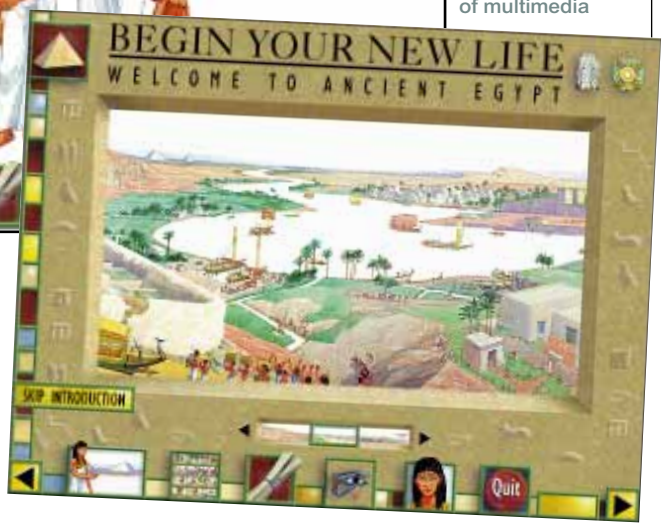
Nelson and His Navy comes from Anglia Multimedia and is linked to Key Stage Three in the National Curriculum. The disc provides you with the opportunity to tour the Victory (even venturing within the cabins not normally open to the public), review Nelson's battles of Trafalgar, the Nile, Copenhagen, and Cape St Vincent, and discover what life was like aboard ship. You can look at navies throughout history, from Alfred the Great to the present day. The disc contains a host of illustrations, including paintings, drawings and artefacts from the collection of the National Maritime Museum.

CD-ROMs from Anglia Multimedia have been coming thick and fast. Last month we looked at Exploring Castles and Vikings! and literally as I was writing the above paragraph, someone delivered a copy of the latest Anglia title: Understanding the Body. There have been a lot of "under the skin" titles floating around, the best known of which

CUTTING EDGE

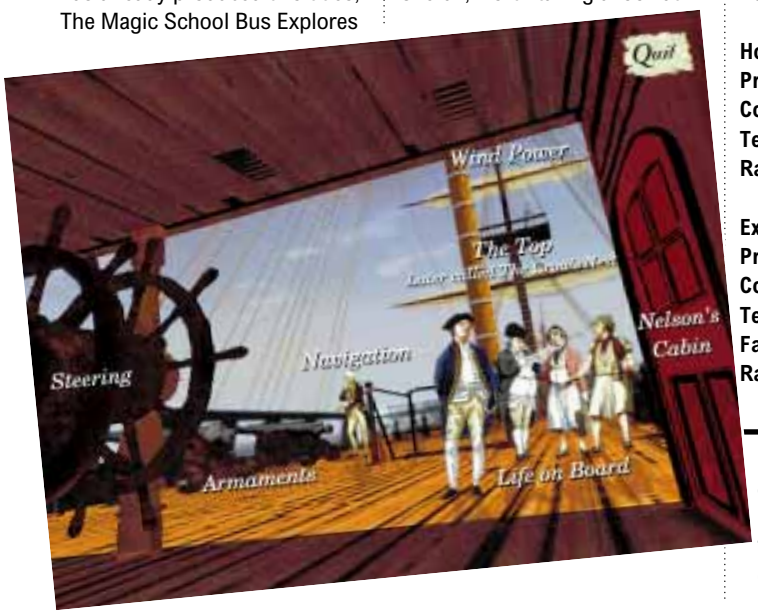



Staying alive Egyptian style — How Would You Survive? pits your wits against the knowledge of ancient societies. It's also stuffed full of multimedia




are probably the various incarnations of Bodyworks and Dorling Kindersley's The Ultimate Human Body. In comparison to those extremely slick titles Understanding the Body only just holds a candle, but there's over 50 videos, hundreds of graphics, loads of photographs, and 50 activity sheets giving ideas for away-from-the-computer projects. The disc also scores because it's linked to Key Stage Three of the National Curriculum and, like most of the Anglia titles, your children are likely to already be familiar with it. The reason for this — and the reason why the titles are appearing at a rate of knots — is that they are being ported to the Windows and Macintosh platforms from the Acorn, widely used in schools. My only real complaint is that the discs are overpriced. With most companies slashing kids' software prices to a £30 peak, the Anglia titles seem at least £10 more than they should be and probably £20 — at £19.99 they'd be a real winner.

My last word goes to The Magic School Bus Explores the Ocean. This is based on The Magic School Bus cartoon series on TV. If you have satellite, you may already have seen it. If not, you can or will soon be able to see it on Channel 4. Microsoft has already produced two titles, The Magic School Bus Explores the Human Body and The Magic School Bus Explores the Solar System. Basically, each disc is the same: the somewhat eccentric teacher Ms Frizzle drives the magic school bus and, as the titles show, takes her class of students into space, around the body or, in the latest title, into the depths of the ocean. The concept is overwhelmingly fun, with jokes, wisecracks and games, but at the core is solid scientific information. Being based on a TV cartoon series overcomes some of the problems with the Americanisms, most notably the fact that we don't have school buses in the same way as they do in America, and makes the characters familiar. So, if you have a child who likes the cartoon series, the discs will make a fun introduction to science. Overall, worth taking a look at.




**The Adventures of Down Under Dan, Kingdom at War, The Adventures of Busy Billy, Make Me a World, Things For Kids, Treasure Hunt**
**Price** £29.95 inc £5 shipping & VAT
**Contact** Guildsoft
**Tel** 01752 895100
**Fax** 01752 894833
**Rating** ★★★☆☆

**Paperopolis**
**Price** £29.99
**Contact** Virgin Sound and Vision
**Tel** 01782 566511
**Rating** ★★★☆☆

**How Would You Survive?**
**Price** £39.99
**Contact** Matra Hachette Multimedia
**Tel** 0181 600 6023
**Rating** ★★★★☆

**Explorers of the New World**
**Price** £24.99 inc VAT
**Contact** SoftKey International
**Tel** 0181 789 2000
**Fax** 0181 789 5626
**Rating** ★★★★☆

**Nelson and His Navy**
**Price** £39.99
**Contact** Anglia Multimedia
**Tel** 01603 615151
**Fax** 01603 631031
**Rating** ★★★☆☆

**Understanding the Body**
**Price** £39.99
**Contact** Anglia Multimedia
**Tel** 01603 615151
**Fax** 01603 631031
**Rating** ★★★☆☆

**Exploring Castles and Vikings! (also from Anglia Multimedia at £39.99)**

**Magic School Bus Explores the Ocean**
**Magic School Bus Explores the Human Body**
**Magic School Bus Explores the Solar System**
**Price** £29.99 inc VAT
**Contact** Microsoft
**Tel** 01734 270001
**Fax** 01734 270002
**Rating** ★★★★☆

Nelson and his Navy is just one of Anglia Multimedia's new educational CD-ROMs. This is linked to National Curriculum Key Stage Three

CUTTING EDGE

# CD-ROMs


**Take a break from the demands of your drawing package and enjoy some of the world's most famous paintings, from Ancient Egypt to Impressionism. Then lose yourself in celebrity heaven with new film and music titles, and get serious about martial arts. With Adele Dyer.**


### A Stroll Through 20th Century Art; New Media Solutions

In the past few months, another sheaf of art CD-ROMs has appeared. Three of the offerings this month are from New Media Solutions and make use of their own image database, ImageAXS, as an interface to the images, while A Stroll Through 20th Century Art takes an altogether more esoteric approach.

The basic premise of the ImageAXS-based CDs is that the easiest way to learn about art is to see the images themselves, choose something that catches your attention and then look for more information. Pictures can be enlarged, although the larger the view, the more detail you lose as the scans are not at high enough resolution to be viewed at very close quarters. Close-up, the pictures can look too digital and lose the feel of the paint. However, some of the images have smaller sections reproduced, so you can get a closer look at some of the details.

The art itself on all three disks, Ancient Egyptian Art - the Brooklyn Museum, Great Paintings - Renaissance to Impressionism, and Masterworks of Japanese Paintings, is exceptional, as you would expect from some of the best collections in the world.

The background information on the pictures is stored separately on a linked screen, but does suffer from being part of a database. As a result, what you see is a mass of densely typed, 10-point text on a grey background, not the easiest way to read the material and unfortunately you cannot change the typeface or background.

This is a shame, as it detracts from what is otherwise a very sensible way of reviewing a collection. You can look through the collection very much as you would a gallery. Because you have the pictures at a glance, you do not have to spend time searching for an image if you do not know the title.

Examples from **(above)** Great Paintings, **(left)** Masterworks of Japanese Paintings, and **(below)** Ancient Egyptian Art. **Below left** 20th Century Art

A Stroll Through 20th Century Art is a completely different affair. This is a trip through a real gallery — the Maeght Foundation in the south of France, a collection of mainly expressionist works owned by Monsieur and Madame Maeght. Most of the pictures in the collection were painted for them by friends.

The CD takes a tour around the building and grounds, shot in hand-held video mode and shown in a round window. This way of making the video, much favoured of late by Woody Allen *et al*, gives it that slightly shaky, but very arty look which suits the pictures it includes. Otherwise there are numerous ways of finding out more about the various artists and their works, all of them beautifully presented.

Unlike other CD galleries, this one is flexible in its approach. Once you know where to find things, it is easy to navigate around the CD. While you are still learning, your progress does tend to take you on an unhurried but thoroughly rewarding wander through the pages. The result is one of the best art CDs I have seen.

The artists featured are all, as you might expect, 20th century and principally post-war. The likes of Miro,


Braques, Bonnard and Calder all feature prominently, and to accompany their works in the museum there are biographies and explanations of the ethos behind their work.

The approach you choose will depend on how you like your art presented. If you want to be entertained by the tour, then go for the Maeght. If not, the ImageAXS is the best way to get straight to the art itself.

**A Stroll Through 20th Century Art**
**Contact** Matra Hachette Multimedia 0181 600 6000
**Price** £44.99
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**Masterworks of Japanese Paintings**
**Contact** New Media Solutions 0171 229 1708
**Price** £39.95
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**Great Paintings — Renaissance to Impressionism**
**Contact** New Media Solutions 0171 229 1708
**Price** £39.95
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**Ancient Egyptian Art — the Brooklyn Museum**
**Contact** New Media Solutions 0171 229 1708
**Price** £39.95
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## Cinemania 96; Music Central 96

Updating and expanding its range of home entertainment titles, Microsoft has released Cinemania 96 and Music Central 96. The former is an old favourite; the latter has the same idea as Cinemania, but applied to music, not movies.

Both titles are highly slick.


**Above** Brad Pitt, one of the stars of Cinemania 96
**Right** Lock up your daughters! The good old Rolling Stones make an appearance in Music Central 96

They have plenty of stills and videos, as well as containing reviews by three good critics. This year's version of Cinemania, and indeed Music Central, are also less prone to date as quickly as other year's editions, since you can download monthly updates from the Microsoft Network or Web site. Providing, of course, that you are online.

Both the material and the interface of Cinemania have been updated since last year. The result is a very smart disk which does not grate either due to a clunky interface or — a regrettably common problem — because it's an American product, and the material contained on the disk is comprehensive. One particularly nice touch is the facility to search for an idea of a video to rent. You choose a category and then spin a kind of roulette wheel to reveal the choices Cinemania has made on your behalf.

The only downer about this CD is the categories it presents. For example, if you want to search for a Bond film, you have to look up either the particular titles or the leading actors and find the film from their filmographies.

Music Central is similarly comprehensive. We sat in the office, scratching our heads to think of the most obscure acts ever to walk into a recording studio, and were duly impressed when we found them all. Blues violinists, one-hit wonders and tuneless troubadours — they were all there.

For all the artists there is either a biography or discography, generally both. The biographies cover such things as musical direction and the artist's musical career. The discographies, however, are probably of most use, as they give reviews of the albums, track titles, record company and catalogue number. Together with the videos and sound tracks, this is a highly entertaining package.

**Cinemania 96**
**Contact** Microsoft 0345 002000
**Price** £29.99
●●●●❍

**Music Central 96**
**Contact** Microsoft 0345 002000
**Price** £39.99
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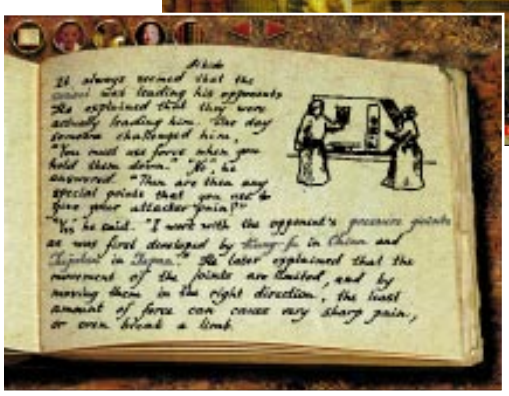
## The Martial Arts Explorer

If, after a steady diet of Bruce Lee films, you are tempted to classify all martial arts as "kung fu", then you are in urgent need of an education from this CD. It's intended to give Western eyes an understanding of the myriad of martial arts and the culture surrounding them. So the two main parts of the CD deal with different ways of discovering different forms from diverse perspectives.

The first of these is the "comparaview", a series of video clips demonstrating various aspects of the different arts. For example, you can choose to look at leg actions in Aikido, or the use of the sword in Kendo. The screen is built in such a way that you can select two videos at a time and watch one after the other, comparing techniques.

There's much more to martial arts than Bruce Lee and kung fu, as this CD will show you

The second exploration is through the journal of the martial arts explorer himself, Tensakusha. He travelled around Japan, meeting great martial arts masters, learning about martial culture, its philosophies and the fine arts associated with it. The journal is in the form of a book, so you can click to turn the pages. It has the feel of an ancient document and so recreates the ancient traditions of the arts described very effectively.

This section holds the rest of the disk together and makes all the other parts fall into place. The gallery of fine art and the library of explanatory texts go into greater detail about the ideas raised in the journal. The library actually goes far beyond this, offering a wealth of information on all manner of oriental cultural matters.

A book accompanies the CD, so you will not have to read quite so much inormation off the screen. It not only contains basic information on each of the martial arts covered on the screen, but also a glossary — a useful inclusion.

**The Martial Arts Explorer**
**Contact Softkey** 0181 789 2000
**Price** £24.99
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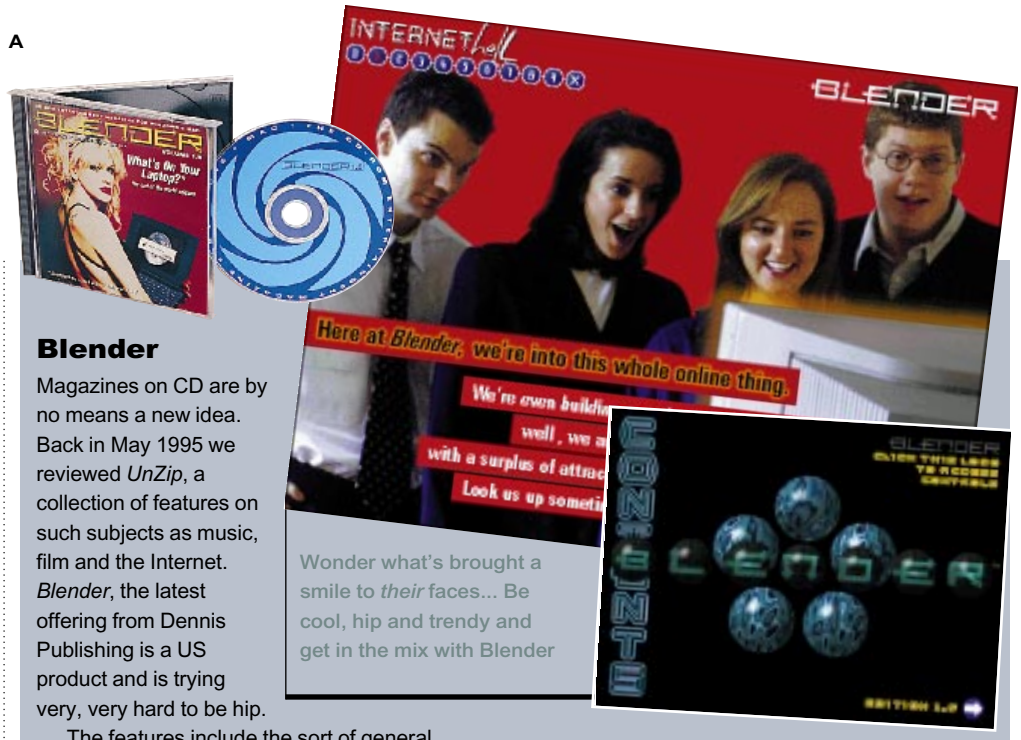


## Blender

Magazines on CD are by no means a new idea. Back in May 1995 we reviewed *UnZip*, a collection of features on such subjects as music, film and the Internet. *Blender*, the latest offering from Dennis Publishing is a US product and is trying very, very hard to be hip.

Wonder what's brought a smile to *their* faces... Be cool, hip and trendy and get in the mix with Blender

The features include the sort of general interest topics thought to be of most interest to the generation X — cinema, cartoons, music and fashion. The general feeling is that someone has condensed *The Face* into multimedia format.

The relative value of what is on the disk is questionable. The ethos seems to be that you have to cram as much in the way of multimedia as you can into each frame. So in the feature on Courtney Love, for example, you get a background picture of the woman in question or, for some bizarre reason, the *Blender* editorial team, and a few lines of text.

The actual text is even more dubious. It is designer journalism — too clever for its own good without imparting any real information. It sounds, perhaps to my undiscerning ear, like the kind of drivel you hear from overexcited and slightly inebriated teenagers on their big night out.

It does have a few redeeming features in the form of some quite entertaining cartoons and the odd snatch of music, but most of the items are skimpy and unintelligible, like the section on the rubbish Courtney Love puts onto the Net while chatting to her friends. You, the user, are asked to help put a stop to it with a barrage of equally inane outpourings.

The fundamental idea behind Blender is good, but it suffers from bad execution. It tries to do everything, and ends up not doing anything quite well enough to persuade to me give up magazines in favour of CDs.

**Contact** Dennis International fax 001 212 302 2635
**Price** $29.95 for 6 issues
●●○○○

# Screenplay

## NEWS

## It's fore you

PC golfers who are teed off with inferior software simulations should take a look at the latest release from Microsoft: Golf 2.0 is now available on CD-ROM and is designed to take advantage of Windows 95. The new version provides 36 holes at both Torrey Pines and Firestone Country Club, and includes "Skins", the US game-scoring feature that raises the stakes with each carry-over.

Perhaps the most interesting improvement of all is a new feature called PlayerNet, the first version of Microsoft's multi-player gaming environment. Golfers can connect to each other over a LAN, play in competition and enjoy the occasional network chat.

Golf 2.0 is compatible with Windows 3.1 and Windows 95 and costs £29.99.

*Microsoft 01734 270001*

## 3 Prong attack

Grolier Electronic Publishing has entered the games arena with a new name and some intriguing titles. Its new company, 3 Prong Plug, will concentrate solely on games production.

Among the first of its forthcoming titles is "Terror T.R.A.X". Destined to appeal to fans of the hit sci-fi series The X-Files, Terror T.R.A.X (Trace, Research, Analyse and Exterminate) casts you as an undercover operative investigating paranormal activity. You travel through a city searching for vampires and the undead guided by Ether, a digital ghost computer image. 3 Prong Plug claims Terror T.R.A.X. offers a full-screen video filled with exceptional special effects, graphics, sets and acting.

If you're more of a Lt. Columbo than an Agent Mulder, then "SFPD Homicide Case File: The Body in the Bay" may be more up your street. It's a murder mystery based on a real case that took place in San Francisco. Playing the role of rookie detective, you must identify the body, interview suspects and witnesses, collect evidence and make an arrest. You must build a strong enough case for the DA to get the conviction and you've only got two weeks in which to do it.

SFPD includes full motion video, sound, music, photos and dramatic witness dialogue from actual case transcripts. And there's an on-screen advisor who just happens to be Frank Falzon, the real investigator who solved the case.

*Grolier (France)*
*00 33 1 47 45 94 45*



## All in the head

For those who want to talk as well as listen to their PC, Logic 3 has come up with the ScreenBeat Headphone with Boom Microphone.

This lightweight multimedia affair has been designed to ensure high levels of comfort during PC bonding sessions, and you get the whole package for a mere £9.99.

Also from Logic 3 comes the PC Tracer joystick. But this is not just any old £12.99 budget shaft — it claims to have a "Sensitive Hand" grip, designed for improved control and two high-precision X-Y trim controls to adjust tension.

With two fire buttons and an option for high speed auto-fire, the PC Tracer offers a fair amount of flexibility and its small, contoured base won't deprive you of desk space.

Both products are distributed by Spectravideo on 0181 902 2211.

## Charts

HMV games LEVELONE

| | | |
|---|---|---|
| 1 | FIFA 96 (CD) | EA |
| 2 | Worms (CD) | Ocean |
| 3 | Championship Manager 2 (CD) | Domark |
| 4 | Screamer (CD) | Virgin |
| 5 | Rebel Assault 2 (CD) | Virgin |
| 6 | 7th Guest —White Label (CD) | Virgin |
| 7 | Rebel Assault — White Label (CD) | Virgin |
| 8 | NBA Live 95 (CD) | EA |
| 9 | Command & Conquer (CD) | Virgin |
| 10 | Destruction Derby (CD) | Sony Int |
| 11 | TFX EF2000 (CD) | Ocean |
| 12 | Syndicate Plus (CD) | EA |
| 13 | Actua Soccer (CD) | Gremlin |
| 14 | Day of the Tentacle: WL (CD) | US Gold |
| 15 | Grand Prix Manager (CD) | Micropose |
| 16 | Desert/Jungle Strike (CD) | EA |
| 17 | Tie-Fighter Collector's CD | Virgin |
| 18 | The Dig (CD) | Virgin |
| 19 | Warcraft 2 (CD) | Mindscape |
| 20 | Sam & Max Hit The Road (CD) | Kixx |

CUTTING EDGE

# Virtua Fighter 2

**So just *how* tough do you think you are? The new Saturn version of this beat 'em up will really put you to the test. Its similarity to the arcade version really knocked the wind out of Chris Cain.**

While Sega is still the undisputed heavyweight champion of the arcades, its image in the console world has taken a bit of a battering: the Saturn is currently playing second fiddle to Sony's Playstation, and there are doubts among consumers about its power to compete. What Sega needs is a state-of-the-art title to put it back on top, and Virtua Fighter 2 could do just that.

Virtua Fighter 2 is the sequel to Sega's original ground breaking 3D beat 'em up, one of the most popular arcade games of 1995. As with most of this genre, the game centres on an annual martial arts tournament. The idea is simply to enter the competition and win. Each of the characters you play has a story background and enters the tournament for a different reason. Virtua Fighter 2 adds two characters to the original eight.

The tournament is split into 11 fights: one against each of the other characters, one against yourself, and a bonus battle. Fights are organised on a best of three basis, and rounds are won either by knocking out your opponent or by getting them to step outside the ring. When you've notched up two points you get to perform a victory stance, taunt the loser in one of three ways and move on to the next level.

### The wince factor

The ideas behind VF2 may be simplistic, but beating your opponents isn't easy as each is armed with between 50-70 fighting techniques. These include assorted spinning kicks, powerful punches, back-breaking throws and a variety of other moves guaranteed to make you wince. What's more you'll need to learn to perform all of your characters' moves to stand a chance of getting though to the end. Perfecting the moves and then learning to string effective combinations together is really what the game is all about.

Graphically, the Saturn version of Virtua Fighter 2 is not just quite close to the arcade version, it's ridiculously close: when you consider that the arcade system costs ten times as much as the console, what Sega has achieved with its sub-£300 box is nothing short of spectacular. The characters and backgrounds are updated at a smooth 60fps (frames per second) — 50fps on the UK PAL version — and the animation and detail are simply first class. Advanced motion tracking techniques have been used to provide an unparalleled level of realism and texture mapping gives everything a solid look. As nice as they are, the static screenshots shown here simply don't do the game justice.

In the sound department, the Saturn version is, again, almost as impressive as the arcade version. But where VF2 scores most is in its depth of playability. It outclasses every other game of its type thanks to what has to be the perfect control system and learning curve: you really get a feel for each of the characters and their fighting styles, and you can play in different ways depending on your alter ego at the time.

Sega has included several new options in the home version, including a Team Battle option, a Ranking mode to grade your skill, and a Watch mode. These additions work well to extend the game's lifespan although most players will stick to one or two-player modes.

If Virtua Fighter 2 doesn't put Sega and the Saturn firmly back on the map and shake up Sony at the same time, I'll eat my gamepad; the only better beat 'em up available is the arcade version.

**System requirements**
Sega Saturn, one or two gamepads
**Price** £44.99
**Contact** Sega 0171 373 3000

# The Hive



**Bee-ware! There's no honey in this hive, as Dylan Armbrust discovered when he tried to smoke out the protectors of the evil, toxin-producing Hivasects — and found his legs turning to Royal jelly.**

If you're looking for a good buzz (game buzz, that is) then you won't want to miss this one, released by Trimark Interactive and created by the Rainbow America Team. The Hive is exclusively for Windows 95. It boasts of interactive action in "never before seen" Panoractive sequences that offer a 360-degree range of freedom for realtime game play in a 3D environment.

You are Max, a Federation agent sent to do battle with the Black Nexus Mob, those nasty people who have resurrected the Hivasects, producers of a deadly bio-toxin from the now extinct Ancients civilisation. Your job is to infiltrate the Mob, who are masquerading as the Noir Dyne Corporation, discover the hive and destroy it. The only help you have along the way are data bursts of information from your Federation liaison, Ginger Malloy.

The game is split into 20 scenes, the first starting with Max attempting to infiltrate the Noir Dyne Corporation to capture a sample of the deadly toxin, for study. Unfortunately, just as Max loads the sample, Ginger notifies him that it is a set-up and his cargo is a bomb. After quickly ejecting the load and just barely avoiding the blast, the battle commences. With his cover blown, havoc erupts around him.

Max must then progress through various stages blasting Quad Fighters, avoiding sheer rock faces and navigating mazes until he reaches the final stage of confrontation in the Queen's Chambers.

The game starts off fine and seems exciting enough, but its limitations show through fairly soon. Whenever I think "interactive", I have visions of being able to navigate wherever I need to go. But with The Hive I found myself becoming frustrated with being unable to do this. All the scenes begin with a non-interactive video sequence and action scenes are only at the game's pre-programmed discretion.

Yes, the Panoractive scenes do provide a 360-degree range of view and/or fighting capability but that's it — otherwise you are stationary. I found this limiting as I ended up a sitting duck in many scenes and the only determinant of moving forward in the scene is how many people or things you blow away. And if I'm going to blow things away, can't I please at least sneak up on them and toast 'em that way? Nope, not in this game I can't.

The graphics aren't that bad: resolution is from 300 x 200 x 256 colours to 640 x 480 x 65,536 colours, but is dependent on what CPU you have and how much RAM is present on your graphics card. More is better.

Overall, I'd say it's an OK game: there's lots of action and plenty of blood splats but it comes up a bit short on freedom of movement.

**System requirements**
486/66 with 8Mb, Windows 95, double speed CD-ROM, MPC Level 2 compatible 16-bit sound card. Supports joysticks and mouse, but not gamepads.
**Price** £39.99
**Contact** Funsoft 0181 748 7565

# Steel Panthers

**Peace in our time? Certainly not. David Brake dons his full metal jacket to review a war combat game that takes the genre to new heights of realism.**

The past few months have been great for those who like strategy games and recently Westwood Studio's Command and Conquer has topped the charts. But now, SSI's Steel Panthers has arrived: a simulation of World War II tactical combat that is as near perfect a game of its kind as I have seen.

This game feels totally true to life. Earlier simulations tended to

*Get right into the muck and bullets — demoralise the opposition and destroy those tanks, in Steel Panzers… sorry, Panthers*

be frustrating, as combat troops were often like automatons. In this game, however, morale plays a key role: it may not be possible to destroy a Panther tank for instance, but if you bounce enough shells off the front of its armour or immobilise it, the crew will panic and bail out. If you are lucky, you can rally them to board the tank again and fight on.

Your chance of hitting the enemy is realistic, too: it depends on whether your own and/or your enemy's vehicles are moving; the morale of your crew; whether they are distracted by being fired upon; whether you've previously fired a few ranging shots, plus a host of other factors. You are not only informed when you hit your opponent but also where — you need to know that a hit on the side or rear of a tank is more likely to destroy it than one on the front, say.

With most simulations of this sophistication, the designers tend to concentrate on getting the mechanics right and forget the need to make the game visually appealing. Steel Panthers is not only one of the most rigorously accurate WWII simulations I've seen, it's also one of the most attractive. It works in SVGA. Each armoured vehicle, artillery piece or infantryman has its own distinctive and realistic outline and is placed on attractively drawn terrain. You can zoom in and out of the map and view a unit's line of sight with just a few clicks of the mouse.

As shells land, or flame-throwers are used, or vehicles destroyed, the landscape reflects a visible beating: buildings burst into flame, wrecks are scattered around and shell-holes gradually cover the map.

Steel Panthers allows you to pitch any two of the major combatant nations of WWII into battle, during any period from 1939 to 1945. It includes a number of set battles and several campaigns which allow you to gain experience by following your unit's progress from battle to battle. You can even design your own scenarios

Of course, no game of this ambition is entirely perfect; a few minor bugs remain here and there. Some of the ways in which features like "opportunity fire" have been presented might have been designed differently and SSI is working on improved multi-player options which will be offered to all owners at a later date.

The unparalleled realism and attractive interface of Steel Panthers has set a new standard which will be hard for others to match. It's a classic.

**System requirements**
486/33 with 512Kb or better VRAM, 12Mb minimum disk space, 8Mb of RAM, double-speed CD-ROM.
**Price** £44.99
**Contact** Mindscape
01444 246333

## Leisure Lines

### Brainteasers courtesy of JJ Clessa.

**Quickie**
How can 25 be doubled by reversing its digits? (i.e. so that 52 = twice 25.)

**This Month's Prize Puzzle**
Many years ago, when computers were a rarity and the terms mega and giga hadn't even been imagined — even Kb meant a lot! — there was a great deal of effort spent on techniques for reducing program sizes and increasing program speeds. One such strategy was used for generating 2-digit random numbers (in a statistical sense). It consisted of:
1. Starting with a 4-digit "seed" and squaring this.
2. Choosing the central 4 digits from the 8-digit square (using leading zeroes if necessary).
3. Generating four "random" 2-digit numbers from these central 4 digits (ABCD) — i.e. AB, BC, CD, and DA
4. Repeating steps 1 to 3 using ABCD as the next seed, and so on.

The technique was statistically dubious, although it served its purpose since it was relatively fast and economical on memory. But all too frequently, the cycle was cut short by a recurrence of a previous seed. When this happened, the sequence was stopped, a new seed chosen and the whole process repeated. To illustrate, with an initial seed of 1018:

**$1018^2$ = 01036324** gives a new seed of **0363** and the random numbers of **03, 36, 63, 30**
**$0363^2$ = 00131769** gives a new seed of **1317** and random numbers **13, 21, 17, 71**
**$1317^2$ = 01734489** then **$7344^2$ = 53934336, $9343^2$ = 87291649, $2916^2$ = 08503056, $5030^2$ = 25300900, $3009^2$ = 09054081, $0540^2$ = 00291600**

**2916** — is a repeat of an earlier seed and therefore the cycle ends after eight iterations. At this point 27 different 2-digit numbers will have been generated. Get the idea?

**For this month's prize problem, two answers are needed:**
Firstly, I want you to find the longest possible cycle — i.e. with the most number of iterations before a seed repeats. Tell me the starting seed and the number of iterations.

Generation of all 100 2-digit numbers is not possible in a single cycle, however, there exists more than one cycle which will produce a maximum possible number of different 2-digit random numbers. For your second answer, I want to know the shortest such cycle.

I need the starting seed, the number of iterations, and the number of different 2-digit numbers it produces.

Answers on a postcard or the back of a sealed envelope — no letters and no floppy disks — to: PCW Prize Puzzle - March 1996, P.O. Box 99, Harrogate, N. Yorks HG2 0XJ, to arrive not later than 20th March 1996. Good Luck!

# Win a Lexmark colour printer

Adding to its already superb range of colour printers, Lexmark has produced a new inkjet, the Colour Jetprinter 1020. It produces 300 x 600dpi in colour or black with print quality enhancement technology to smooth out the jagged edges on the spots of ink. To complete the deal it comes with CorelDraw 3 on CD.

We have five of these little beauties, reviewed in this month's *First Impressions*. To win one, just answer this question:

What resolution does the Colour Jetprinter produce?

**a)** 300 x 600
**b)** 600 x 600
**c)** 600 x 400

### Internet To Go

If you've ever fancied getting connected and blanched at the thought, your prayers have now been answered. Cybertronics Technology is giving us three Internet To Go kits, reviewed in *First Impressions* and including a 28.8 modem, a video, a book, a CD-ROM and the chance to access six service providers, all before taking out a regular subscription.


If you fancy one of these kits, just tell us what that well-known Internet protocol, TCP/IP, stands for:

**a)** Transfer Computer Protocol /Internet Protocol
**b)** Transmission Control Protocol /Internet Protocol
**c)** Transmission Center Protocol /Interstate Protocol

### TextBridge

Xerox Imaging Systems has given us five copies of its TextBridge Pro 3.0 OCR package. As it comes with quite a few of the document scanners we have reviewed in this issue (page 172), it is a package we can heartily recommend.

It is TWAIN compliant: you can scan direct into the package and verify the document as it goes along to train the package. It includes such nifty features as a fax enhancement mode to minimise mistakes with tricky faxes, supports 12 European languages and, most importantly, keeps the formatting of the original document.

To win a copy, answer the following question:

How many European languages does TextBridge support?

**a)** 10 **b)** 11 **c)** 12

### Rules of entry

This competition is open to all readers of *Personal Computer World* except for employees, and their families, of VNU Business Publications, Lexmark, Cybertronics Technology and Xerox Imaging Systems. Entries to arrive by 22nd March 1996. The Editor of *PCW* is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

### PCW/Lexmark/Cybertronics/Xerox Competition

To enter the competition, just complete and post this coupon.

Name .....
Address .....
.....
..... Postcode .....
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Answers (circle a, b or c)

| | | | |
|---|---|---|---|
| Q1) Jetprinter resolution: | a | b | c |
| Q2) TCP/IP: | a | b | c |
| Q3) Textbridge: | a | b | c |

Send your completed coupon to: March Competition, Personal Computer World Editorial, VNU Business Publications, VNU House, 32-34 Broadwick Street, London W1A 2HG.

# Hands On Contents

## OPERATING SYSTEMS









## APPLICATIONS













*Hands On* is the place where readers can contribute to *PCW*, and as always we'll pay for anything we use. Macros, sections of code and hints and tips will be rewarded with a £20 book or record token (please say which you'd prefer) and we'll pay hard cash for longer, more involved pieces. Please include relevant screenshots in .GIF format.

All submissions should be emailed to the author of the appropriate section, or snailmailed to Hands On, *Personal Computer World* Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG. Questions and short hints and tips can be faxed on 0171 316 9313.

We're constantly working to improve the contents of *Hands On*. If you have any suggestions, send them to the Editor at the address above, or email them to: editor@pcw.ccmail.compuserve.com

## PROGRAMMING





## AND THE REST...







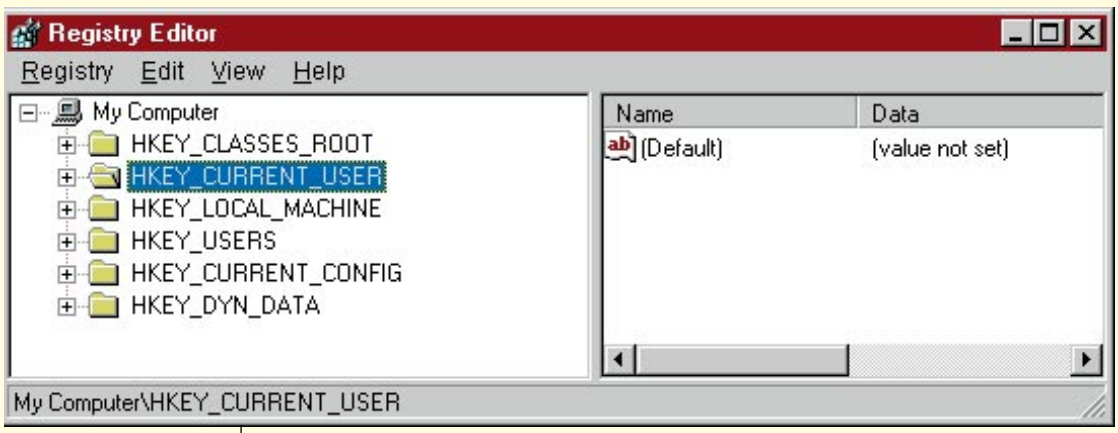
# Regarding **Reggie**

**"Get to know the enemy" says Tim Nott, so taking a pace back he provides you with an overview of the Registry, looks at local machinery, and tells a cautionary tale which could help you to clean up in the redundancy stakes.**

During the past few months, we've looked at various ways in which you can tweak Windows by editing the Registry. Last month, we looked at various ways of backing up the Registry files, so perhaps it's time we took a step back for an overview of this magnificent thing and what it does.

The Registry isn't a completely new development. Windows 3.1 has a Registry which is used to store details of "associations" of file types with programs, as well as information to support Object Linking and Embedding (OLE) and drag and drop operations. With Windows 95, though, its role has been much expanded. All the information that was previously contained in your PC's configuration files (CONFIG.SYS, AUTOEXEC.BAT and both Windows and third-party .INI files) can now be stored in a single database; the Registry. In theory, this means you don't need any of the former files, but in practice it's not quite that idyllic, because "old" 16-bit Windows applications, DOS applications, and some hardware will still need them.

For example, older CD-ROM drives unsupported by Windows 95 will need drivers loaded in CONFIG.SYS and AUTOEXEC.BAT, as will DOS games. Windows 3.1 applications will still be wanting to list fonts via WIN.INI, or store settings in a private .INI file. Some of these things will be corrected by Windows: if an application installs TrueType fonts the old way, with .TTF and .FOT files in Windows\System and a listing in WIN.INI, then the actual font (.TTF) files will be moved to the Fonts folder; the information held in WIN.INI and the font description (.FOT) files will be moved to the Registry.




*The six sections of the Registry*

The Registry itself consists of two files: USER.DAT and SYSTEM.DAT. As you might expect, the former stores information (such as desktop settings), chosen by (or for) the user, while the latter holds the hardware-specific settings. The point of this physical separation is that user settings can be portable; you can log in from any PC on a network and be greeted by your familiar desktop.

Unlike the .INI files, the data isn't in text format, and there's more of it as well — on my dual-boot system the .DAT files are over seven times as large as the combined mass of the Windows 3.1/DOS 6 configuration files and private .INIs. To view and edit the Registry, you need to use its own editor; Regedit.exe. This isn't added to any start menus in a normal installation, but it can be found in the main Windows folder, so you can either dig it out of there or, more simply, use the "Run…" command.

## Branching out

Start Regedit and you'll find that unlike .INI files, which can only have two levels (sections and entries), the Registry branches into multiple levels. The arrangement is rather like Explorer; on the left is an expandable tree of keys and subkeys.

These are analogous to the INI file

## Ten top tips

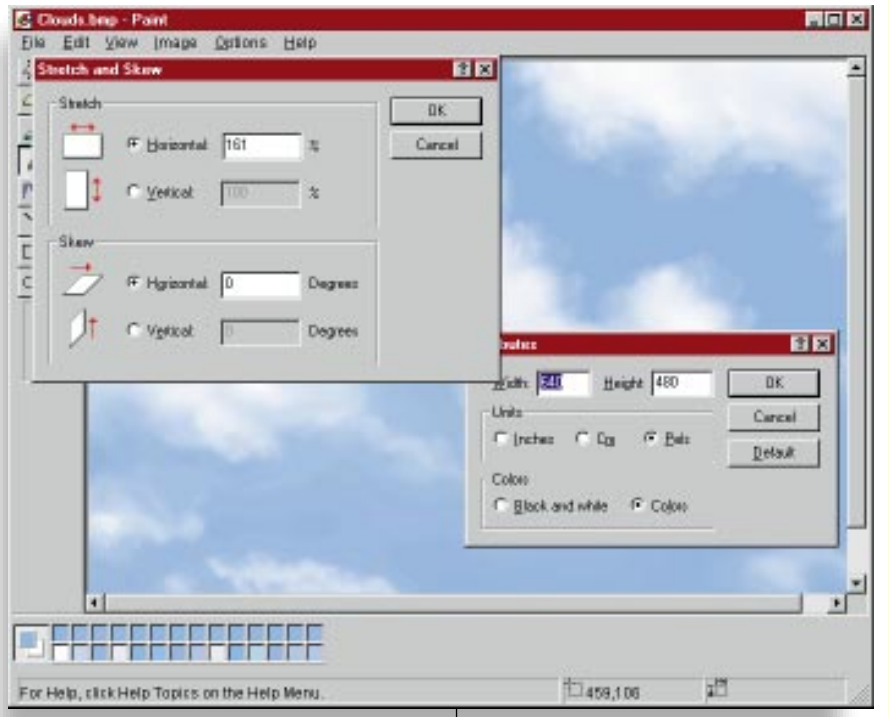
**1 Disk space** If you're tight on disk space, take a look in the Windows\Help folder where you'll find a number of .AVI (video clip) files.

Have a look, for instance, at SCROLL.AVI and decide whether you really need a 1.5Mb demonstration on using scroll bars. If not, you can delete all these files — you'll get an "unable to display graphic" in the Help file, but you'll regain possession of 7.5Mb of disk space.

**2 A little more disk space** While you're at it, you might also like to cast a jaundiced ear over the contents of the "Media" folder — there's another megabyte here and you may well decide you can do without a MIDI version of the Dance of the Sugar Plum Fairy.

**3. Wallpaper** The Plus! pack has a neat trick to stretch your wallpaper to fit the screen, but you can DIY with Paint.

Load the image, and then go to "Image/Attributes…" to find out the height and width — make sure the "Pels" option is checked. Divide the figures into your actual screen resolution and express the result as a percentage. Go to "Image/Stretch/Skew" and stretch by the appropriate amount — you'll need to make two journeys, as Paint apparently lets you stretch in only one direction at a time. Save the file, and you'll notice that on the File menu there's an option to "Set as wallpaper" so you don't have to bother with Control Panel or Display Properties.



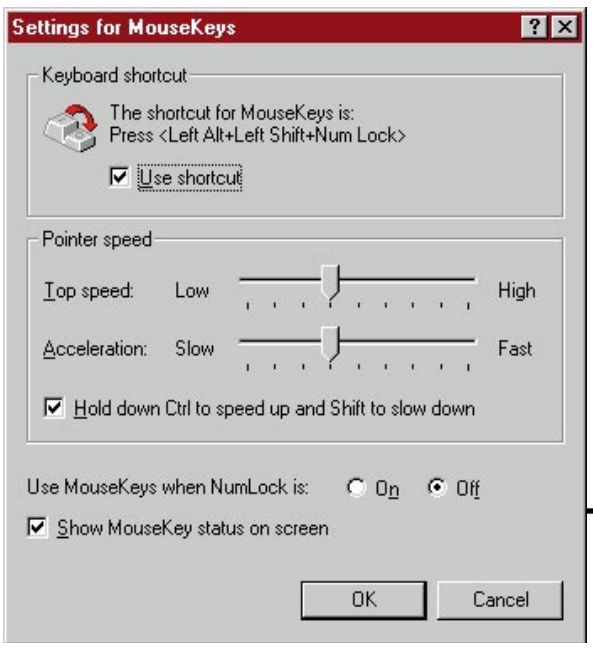

*You don't need the Plus Pack to stretch your wallpaper (see tip number three)*

**4. Restarting** From the "Shut down Windows" dialogue, select "Restart the computer" and hold down the shift key when you click "Yes".

This saves time by merely restarting Windows, rather than rebooting the PC from scratch.

**5. No mouse?** You can operate the cursor from the numeric keypad by going to "Control Panel/ Accessibility Options".

Select the Mouse tab and activate the "MouseKeys" box.




*Mouseless Windows (see tip number five)*

**6. Run…** The "Run…" command on the start menu maintains a list of recently-run commands. Click on the button to the right of the entry box to see a list of the last ten — scroll down for more.

**7. Send to…** You can send a file to an often-used folder by placing a shortcut in the "Windows\SendTo" folder.

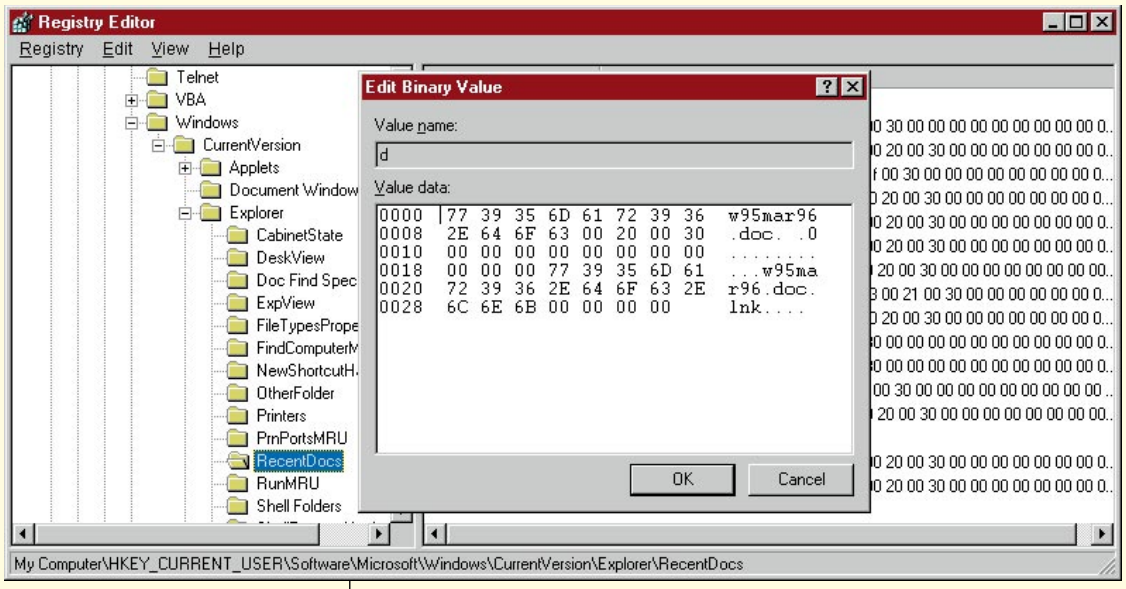
**8. More send to…** Note that the usual keyboard modifiers work with the above tip. No modifier; copies to another drive or moves within the same drive. COntrol COpies rather than moves on the same drive — Shift SHIFTS (i.e. moves, rather than copies) between drives.

**9. Formatting floppies** If Windows refuses to format a floppy disk, it's probably because you have a folder open on that disk. Make sure there are no A:\… folders open, right click on the drive icon from "My Computer" and select "Format".

**10. Taskbar** Hold the pointer over a button and wait a little to see a pop-up giving the full text of a truncated description.

square-bracketed section headings. The right-hand pane contains the entries for the selected key; as with .INI files, each one consists of a name and a value. Values can either be in plain text, as with .INI files, or in binary format expressed in hexadecimal notation. The two physical files are combined into a single database which is then split into six logical sections, all with rather user-hostile names such as HKEY_CLASSES_ROOT.

This, the first section listed in Regedit




*From the Registry — your recently used files*

contains similar information to the Windows 3.1 Registry on file types and OLE information.

Browse through it, and you'll see a long list of extensions and file types. Click on the ".WAV" extension and you'll see, in the right-hand pane, that the default type is "SoundRec". Scroll down to "SoundRec" and expand its tree; you'll see an entry marked "Shell".

Expand this, and you'll find "Open", expand that and you'll find "Command". Click on the latter and you'll see, in the right-hand pane, the command for opening a .WAV file

```
'C:\WINDOWS\sndrec32.exe %1'.
```

The next section, HKEY_CURRENT_USER, is a little more self-evident, and contains the current configuration of items such as sounds, colour schemes, keyboard settings, wallpaper and so on. But there is actually much more: dig down through "Software\Microsoft\Windows\CurrentVersion\Explorer\RecentDocs" for instance, and you'll find the list of recently-used documents that appear on the Start button "Documents" menu. Unless you're a fluent hex reader, this won't make a lot of sense, but double click on one and an editing box will appear showing the hex code of the shortcut, and a translation into text, so you can read the filename.

You'll find entries for third-party applications too; these are the equivalent of the private .INI files of Windows 3.1. The drawback of this is that while the old .INI files were fairly conspicuous by their presence in the Windows directory, these aren't. Unless they uninstall themselves in the prescribed manner, you may find that items you installed from a cover disk, for example, and deleted after a day or so, leave lasting memorials that cumulatively bloat the Registry.

Some keys may be obvious: if you've removed all "Wizzo" products from your system you can safely delete the key of that name, just as you could the .INI file. What you can't do, though, is the old .INI file trick of moving it to a temporary directory before deleting it, to see if anything complains.

Although it's not laid out as such, HKEY_CURRENT_USER is actually a sub-section of HKEY_USERS. If you're on a single-user machine, then the former is a copy of the "Default" branch of the latter. With multiple user profiles enabled, each will have their own section (e.g. Bill, Ann, Mike) in the latter, with the logged-on user's settings appearing in the former.

The "Default" section will still be there for use by anyone who logs on but doesn't have their own "User Profile". For instance, any changes that Bill makes to his settings, such as personal Wallpaper, will be saved to his profile.

## Local machinery

HKEY_LOCAL_MACHINE (the HKEY bit, by the way, denotes a "handle" that software developers can use to access a resource) contains, as you might expect, all the computer-specific rather than user-specific information. This includes things such as hard disks, printers, multimedia and display drivers, modem and port settings.

The sub-tree titles are somewhat misleading: "Hardware", for example, contains only minimal information about communication ports; whereas disks, printers and display settings are spread between "Config" and "Enum". "System" includes multimedia, network, time zone and yet more printer settings. Just as you can have more than one user (each with their own settings), you can also have multiple hardware configurations.

For example, you may have a notebook PC with a VGA display that you can plug in to a docking station which has an SVGA display and printer attached. Each time you start Windows, you'll be prompted to choose the appropriate profile. The relevant settings will then appear under the HKEY_CURRENT_CONFIG section.

The implementation of Plug and Play means that Windows can detect "aware" devices without having to manually specify a configuration. Hence HKEY_DYN_DATA contains settings that don't relate to the Registry files themselves, but to current settings held in memory.

There's a very large "Software" section, too, which contains system-wide information; for example a list of installed fonts, or a record of the last time the hard disk was optimised. Third-party software can also have settings stored here; if there's a conflict between these, and those listed under HKEY_CURRENT_USER, the latter take precedence. You'll also find a subkey under "Software" entitled "Classes". Click on this and you should get a strong feeling of *déja-vu,* as the information here is exactly the same as in HKEY_CLASSES_ROOT. According to the Microsoft Windows 95 Resource Kit "The Hkey_Local_Machine\Software\

## A cautionary tale...

"Idiot of the Month" award goes to myself. As we all know, to get the coveted "Designed for Microsoft Windows 95" on the box, software must adhere to certain standards, one of which is to come with an uninstallation routine. So you should be able to remove an application easily — no stray .DLLs or other files left behind, no redundant information in the registry, and so on. This doesn't happen with Windows 3.1 applications, nor apparently, with several beta versions of Win95 software. Anyway, possessed by a sudden fit of tidiness I decided to clean out a few redundant file types.

I really, really, tried on this one. First I removed the file types from the "View/Options/File Type" dialogue. Great. They went. The next day some of them were back again. "Funny," I thought, "I could have sworn I'd removed those." So I did it again, and this time wrote down the filetypes I'd removed, restarted Windows and there they were.

This was obviously a Registry problem, so I started Regedit and removed all the relevant entries there. It's amazing just how well a determined application can entwine itself here: there are all those straightforward entries that are considerate enough to list the file type or application as a main key, but then there are all sorts of others, too, lurking in the shrubbery of the entries consisting of two squiggly brackets surrounding some fearsome looking hex code. With judicious use of the "Search" tool, it took only an hour or so to purge it of every reference to the accursedly persistent software.

With a smug sense of a job well done, I closed down the PC and restarted. Opened a folder, View/Options/File Types/… AAAAAAARGH! Yes, my old friends were back. Either my PC was haunted, or there was a more rational explanation.

Suspicion number one was that I'd damaged the Registry files and Windows had restored them from the back-ups (see last month's column). A spot more detective work showed that this wasn't the case. The answer was so obvious — especially if you read about Dejan Stojnic's problem in this month's *Hands On Windows 3.1* (page 269) — that I couldn't spot it. By a happy coincidence, reader Tom Smith was having a similar problem and it was he, not I, who fingered the culprit.

Remember WIN.INI? Yes, as I mentioned at the beginning of this column, it's still lurking around for the benefit of older applications that can't install their associations into the Registry. And each time Windows starts, it politely trawls the WIN.INI to see if there's anything in the [Extensions] or [Embedding] sections that needs adding to the Registry. And this was what had been happening.

Moral: if you really want to get rid of something, check WIN.INI as well.

## You must be joking

It's an old joke, but at times particularly appropriate to the Windows 95 online help which seems to list everything except what you want to know: a pilot is lost in low cloud, somewhere around Seattle, looking for the airport. A building looms before him, and he sees someone sitting at a desk by an open window.

"Where am I?" he yells.

"You're in a plane!" comes the reply.

He instantly sets course for a perfect landing. "How did you do that?" asks one of his amazed passengers.

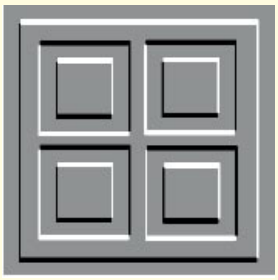
"Easy," says the pilot. "The answer was completely accurate but completely irrelevant to my predicament. So I knew the building was Microsoft Technical Support."

Classes subkey defines types of documents and provides information about OLE and filename-extension associations that can be used by applications. Hkey_Classes_Root is an alias for this subkey. Hkey_Classes_Root merely points to Hkey_Local_Machine\Software\Classes.

The sole purpose for Hkey_Classes_Root is to provide compatibility with the Windows 3.x registration database." And that's pretty much where we came in.

## PCW Contacts

**Tim Nott** can be contacted by post via *PCW* or by email at **timn@cix.compulink.co.uk**



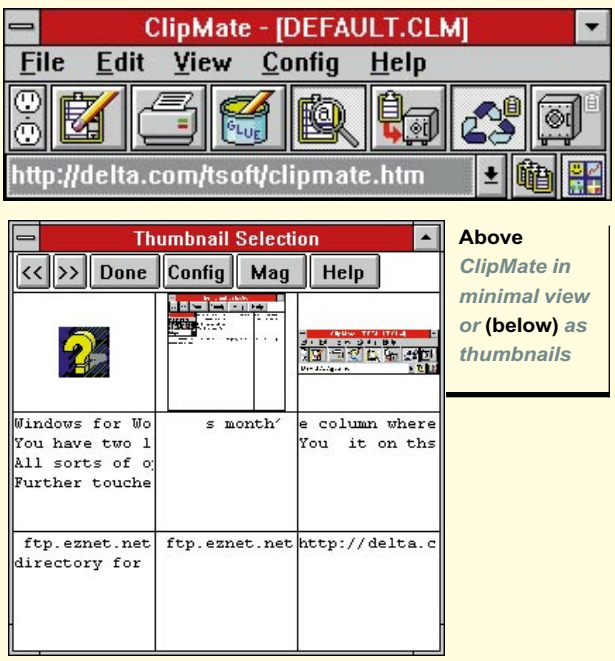
# Stick with your **Mates**

**If you want to get ahead, you'd better get a ClipMate. Tim Nott extols the virtues of a piece of Windows Shareware which turns the good old clipboard into the ultimate writer's (or artist's) tool.**

Welcome back to the column in which we're still allowed to say "directory". Last month we took an in-depth look at the Windows clipboard, and the month before at Xboard, a neat five-barrelled enhancement on the standard product. This month, reader David Agbamu has pointed me in the direction of something even better. ClipMate 3.1 works alongside the Windows native clipboard. Every time you copy something to the Windows Clipboard, Clipmate takes a copy of the item for itself. ClipItems are then available either from a dropdown list, or from a grid of thumbnail views — click on one and it's loaded back into the Windows clipboard ready for pasting.

You have two lists of ClipItems with buttons to switch between them — the "recyclable" list maintains a fixed number of items (default 100) on a first-in first-out basis. The "safe" list keeps items until you delete them, so you could use it for "boilerplate" text, names and addresses, logos or anything you want to use regularly. A "load on demand" feature offloads anything over a kilobyte to disk, so large images or .OLE objects won't eat up all your memory.

Clipmate comes equipped with all sorts of options and extras such as the Glue button, which lets you append text to the previous clip, rather than keep it as a new item. You can magnify the thumbnails — and if the clip is text, edit it. Further touches of luxury include a Flow Text button. Have you ever pasted text from an ASCII file, an online source or an Off-Line Reader into a word processor and had to remove all the surplus line breaks? Even with a macro to automate the process, it's a pain in the neck, is it not? This button does it before you paste, and also removes surplus spaces. The only fault I could find with it — apart from being slow on my system — was that it didn't recognise grabbed screenshots. It's on this month's cover disk and you can also find it online from http://delta.com/tsoft/clipmate.htm, or by anonymous ftp from ftp.eznet.net /pub/tsoft. Search the directory for clipmt*.zip, as the version (last two digits) can change. Clipmate is shareware — you can try it out for 30 days for free before deciding if you want to register for $25.




**Above** *ClipMate in minimal view or* **(below)** *as thumbnails*

## Trick shots

On the subject of screenshots, George Mucho wrote from St Clement's Dane School, asking how the shots for this column were produced. Well, there's no big secret — pressing the Print Screen key captures the entire display to the Clipboard, and if you hold down the Alt key while doing this, just the active window or dialogue box is grabbed. You can then paste this into your favourite bitmap editor. I use PaintShop Pro, because I can have several images loaded at once, and I can save them in the .GIF format which compresses the data. This way it takes up less space on my disk — and those of the *PCW* production team — and also takes less time to transmit by modem. You can, however, use Windows Paintbrush if you're happy with the .BMP or .PCX format — the latter is also compressed, but not quite as efficiently as .GIF.

There is, however, a way to cheat. Sometimes I want to capture the application's main window with a dialogue box open; Alt + Print Screen will only capture one or the other, not both. The trick is to capture the main window first, and paste it into Paintbrush or PaintShop Pro as a "new image". Then activate the dialogue box and capture that. In PaintShop Pro, I then paste the second image as a "new selection" — ie, on top of the existing image — then drag the selection to position it artistically over the main shot. Clicking outside the selection anchors it. Paintbrush will paste the second image over the first by default, but you need to use the right mouse button to drag it into position, otherwise parts of the overlaid image will become transparent.

## Tips & Tricks: cracking walnuts

Shane Devenshire sent a whole sheaf of tips from Walnut Creek, California. Many of these were for Windows applications rather than Windows itself, but I think we can stretch a point in favour of the Microsoft Office toolbar. Double click on the title bar (or anywhere that isn't a button) and it will toggle between floating and docked at the edge of the screen. Another of Shane's tips — and another trick I'd never noticed — is that you don't have to target checkboxes or those tiny round "radio buttons" seen in dialogue boxes exactly. The "hot" zone — that is, the area that will respond to a mouse click — usually extends to include the text alongside. To complete the hat trick, Shane points out that if you're in a hurry, or have a slow PC, you often don't have to wait for a dialogue box or application to load completely before you start typing. Try double-clicking on Word or Excel then immediately start typing, and you'll see what he means.

### A case of corruption

Dejan Stojnic came up with an interesting problem. Since Doublespacing his disk, none of his associations would work any more. Doubleclicking on a .TXT file in File Manager failed to produce Notepad, instead he'd get some limp excuse saying: "File Manager cannot open or print the specified file. Start the application used to create this file, and open or print it from there." He checked the entries under File/Associate… and all seemed to be as it should. He tried recreating the associations, but still no joy.

If this happens to you, the most likely culprit is a corrupt Registry — find REG.DAT in the main Windows directory, back it up somewhere safe, then delete the original. If you restart Windows, it will build a new REG.DAT from the entries in WIN.INI, and you should find that the associations will work again. You may have to redefine some associations, or even reinstall some applications, but often just running them again will restore the necessary information.

Regular readers of this column will be aware of the Windows Paintbrush bug in which Paintbrush is unable to accept anything bigger than its own window pasted in. Alan Salmon came up with a much neater solution than the one I'd suggested. Paste the bitmap as normal, without worrying about the image attributes or window size. Go immediately to the Edit menu, choose Copy to... and enter a file name at the prompt. The image will be saved — you can check by clicking on the Info... button. You can then discard the contents of Paintbrush and open the file you've just created — you should find you have the entire image intact.

### Short and sweet

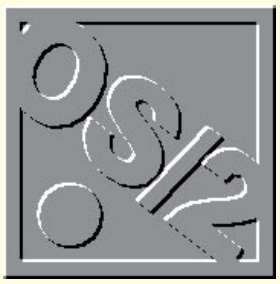
Jim Josefsson from Sweden remarks that I've never mentioned the Short Cut Key feature in Program Manager. In fact I have, but it was a long time ago — August 1993 to be precise — so maybe it's time for a refresher.

You can assign a keystroke combination to a Program Item by selecting the item with a single click, then pressing Alt + Enter to summon the Program Item Properties box. You'll see a box labelled Shortcut Key, with the default contents as None. Click anywhere in this box, don't try to delete the contents, but just type a suitable key — W for Write, perhaps. Windows will preface your choice with "Ctrl + Alt +". Whenever you type Ctrl + Alt + W, Write will leap into action.

There is a snag — as Jim writes: "The shortcuts don't work all the time (perhaps you can explain why). It's seems that Program Manager must be active in some way for the shortcuts to function. When I press a combination of keys and nothing happens, I just give the ProgMan Icon a light click to wake it up and everything works fine." Well, Jim answers his own question there — Program Manager must be the active Window, or have its minimised icon selected, for the shortcuts to work. If the application is already running, however, the same shortcut will bring it to the fore without having to "wake up" Program Manager first. So, deploying a little cunning, you could add an icon for Program Manager to Program Manager itself. This is perfectly legal, and has the interesting side-effect that whatever you type as the Description will replace Program Manager in its title bar. Give it a shortcut — say Ctrl + Alt + P — then wherever you are, Ctrl + Alt + P followed by Ctrl + Alt + W (you don't need to release the Ctrl and Alt keys between these) will launch Write. This won't work, of course, if the current application uses Ctrl + Alt + P for its own purposes.

### PCW Contacts

**Tim Nott** can be contacted either by post c/o *PCW* or by email on **timn@cix.compulink.co.uk**



# JAOW dropping

**If only IBM would stop beating up Windows for a minute, we might be able to appreciate the good things about Warp, says Terence Green.**

November 1995 was a strange month for Warp. IBM announced a product called Just Add Warp and started talking openly about a forthcoming product codenamed Merlin. Just Add Warp (for which the acronym is JAOW, not JAW), was obviously designed as a useful data set for comparing Warp and Windows. It contains some very useful information about Warp which is worth having to hand. Whether it's worth a 3Mb download is another question.

Unfortunately, IBM's Personal Software Products vice president, Dan Lautenbach, introduced JAOW by saying it could "rescue unhappy Windows customers", millions of whom "may have been duped into trying to use [Windows 95]". This is drivel, and insulting to users to boot. With faultless foot-in-mouth talents, Dan went a step further and complained that the plug-and-play features in Windows 95 don't work. This is true but kind of dumb of him to mention when there isn't any plug-and-play in IBM Warp to speak of either.

Well, I suppose the PCMCIA support in Warp sort of qualifies as plug-and-play, but the real reason no-one in the computer industry except Apple does real plug-and-play is because there haven't been any decent open standards for PC peripheral hardware since the introduction of the humungously lashed-up, er, IBM PC hardware standard in 1983. Over to you, Dan...

### The magic of Merlin

What makes the Lautenbach line so depressing is that while he's trashing the opposition, other voices at IBM are starting to talk positively about the next version of Warp, which will ship next summer. Warp II (or whatever they call it) is a fourth generation product. Today's Warp is the result of several years of testing by highly critical users, many of whom have upgraded from Windows. IBM should stick to telling us what Warp does (as JAOW does), and leave us to figure out whether it's better than Windows 95 or no. It doesn't take a genius to figure out whether Windows 95 meets one's needs or not. Many people will be satisfied with it. If not, all we need to know is that there's an alternative.


*Just Add Warp to have (nearly) all your questions answered about OS/2 Warp, its compatibility with your hardware [see text] and how to upgrade to Warp*

The next Warp version, codenamed Merlin, will add a bunch of stuff that really consolidates Warp's position as an alternative to any Windows platform, including Windows NT. Merlin, or Warp II as it may be called, includes symmetric multiprocessor support (SMP), a better fix for the single message queue problem mentioned in last month's column, built-in security, OpenDoc, and improvements to the user interface, among other developments.

As all Warp products have a common base, Merlin will be equally competent as a home user Internet access tool and a server base running any of IBM's upcoming applications servers. It's as though there was only one version of Windows which ran on notebooks, desktops, home office PCs and departmental or enterprise servers with all the benefits that a single code base has for those who have to support and maintain these systems.

### Just Add (OS/2) Warp

The most useful parts of JAOW are the Warp and Warp Connect FAQ (frequently asked questions) lists and the tips and tricks guides, especially the "Stupid OS/2 Tricks" section, which is anything but stupid. It's full of hard facts and useful tips. There's also a copy of the latest Hardware Compatibility list.

The above amounts to about half of JAOW's 3Mb. The Upgrade Advisor is a bit of a disappointment, as its detection features are no more than average and the demo is best skipped over.

JAOW runs on Windows or OS/2, but I initially had problems installing it under OS/2 Warp, as it bombed out with an unhelpful message which Dan Lautenbach forgot to warn me of. JAOW installed fine under Windows however. At this point I called the IBM Helpline in Greenock. This has recently been set up to co-ordinate all European support and it runs a 24-hour support line. The 60 days free support for Warp can be continued for £45 per annum. I called at 1a.m. and was annoyed to have to wait for over two minutes. What kind of propeller-head, I wonder, calls technical support after midnight?

I didn't get the exact answer I wanted from the Helpline, but I did get enough of an answer to suggest my next course of action. In this case, I decided to upgrade using the Warp FixPack #10 referred to in last month's column. What a palaver. First I picked up some spurious messages when I ran the "Kicker" disks and then I checked on CompuServe, where I discovered a fresh set of Kicker disks had been posted. Is this a first? — a fix for install disks for a fixpack?

Anyway, the new set worked and the JAOW problem was solved, despite the fact that the Kicker disk README.1ST file contains some hopelessly outdated explanations of the difference between Corrective Service Disks and FixPacks. This really is the essential difference between Warp and Windows. At least with Windows, you feel that the people who package the product are on your side and you won't have to fight your way through

## Developer's delights

A developer writes, wanting to know whether one could access DB2 databases from Windows. You can — DB2 includes client enablers and there's an ODBC driver for Windows. He said he had searched the documentation and CompuServe for some time without success, so I set off on the Web and headed for the Solution Developer Home Page. There I found reference to the free DB2 Developer Assistance programme which can be applied to throughGO IBMDB2 on CompuServe.

To be fair, the new Solution Developer organisation, which was announced in January, is much improved with a single port of entry instead of the 25-plus separate developer programs it replaces. Those who work in Windows-centric worlds could also check out the new DB2 platform, Windows NT.

Another new development on the Web of interest to OS/2 and Windows developers is the OpenDoc Club page. This is a home page designed to encourage the take-up of OpenDoc, and open-standards alternative object-orientated development platform to Microsoft's proprietary OLE. Co-developed by Apple, Novell, and IBM, OpenDoc includes an OLE wrapper which allows OpenDoc and OLE objects to interoperate, but OpenDoc is available to run on the MacOS, Unix, Windows and OS/2 and is being developed for OS/400 and MVS too.

Apple has shipped the first OpenDoc shrink-wrap and OS/2 and Windows code is now in Beta. Developers can start working with OpenDoc by picking up one of the developer release Betas, details of which can be found at Club OpenDoc. Rather than list loads of URLs here, I would suggest you hit WWW.IBM.COM and take it from there to find Club OpenDoc, the Solution Developer Home Page, FixPacks, Just Add Warp, and the OS/2 Warp home page.

seven hells in order to see what all the fuss is about.

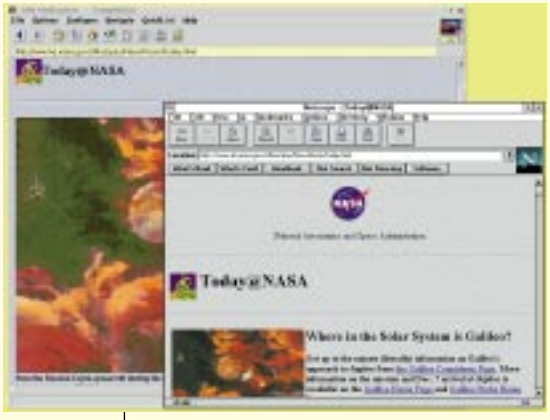
### First aid with TCP/IP

Sometimes people have trouble getting Netscape (version 1.0 or 2.0 Beta) running under OS/2, and the problem is usually caused by a Winsock clash. Warp's TCP/IP includes all you need to run Winsock-compliant TCP/IP applications such as World Wide Web browsers and TCP/IP utilities in OS/2, DOS and Windows sessions, but Netscape finds a third-party Windows WINSOCK.DLL in the path and tries to use this instead of the correct Warp-provided WINSOCK.DLL, which resides in the \TCPIP\DOS\BIN sub-directory by default.

This usually happens either because Warp was installed over an existing Windows installation, or when you install an Internet package which includes its own WINSOCK.DLL, which it invariably places in the \OS2\MDOS\WINOS2\SYSTEM subdirectory. Make sure you only have one WINSOCK.DLL, the Warp one, in the path and Netscape will run.

### Essential ingredients

In order for the above to work you do need IBM TCP/IP loaded, either TCP/IP 2.0 which ships as the Internet Access Kit in the Warp Bonus Pak, or the TCP/IP 3.0 provided with Warp Connect. You'll need to download a few fixes for TCP/IP 2.0 if you want to run the latest Web Explorer 1.03 as well.




*You don't have to use Web Explorer to trawl around the Web — Warp supports any Windows Web navigator right out of the box. Difference is you have to pay for Netscape but IBM Web Explorer is free with Warp and Warp Connect*

### PCW Contacts

**Terence Green** can be contacted either by post c/o *PCW*, or by email to **tgreen@cix.compulink.co.uk**
Updates and fixes other than FixPacks are to be found on CompuServe (OS2SUPPO)
**ftp://ftp.software.ibm.com**
**and http://www.ibm.com**

# The best things in life are **free**

## In a capitalist society, is there a place for free software? asks **Chris Bidmead**. Plus, how Emacs can improve your vocabulary, and Linux joins X/Open

Some months ago, I told a story in this column about the day I confronted Bill Gates with the ideas of Richard Stallman, founder of the Free Software Foundation, author of Emacs, and one of my personal heroes. "Shouldn't all software really be free?" I challenged Gates. He thought for a moment and then came back with what struck me as a brilliant response: "You're right," he said. "And all hardware too."

People call Stallman RMS, in part because those are his initials, but also, I suspect, because "Root Mean Square" fits him to a tee. I know he'll object to my saying this (he seems to object to most things) but he's "Root" because he's the father of GNU (which, come to think of it, is most of what you're using when you're using Linux); he's "Mean" because he sits truly in the dead centre of all this, but also because of the surliness of his pronouncements (see below); and he's "Square" because he's perfectly happy to sound off about "moral values" in a way that falls quaintly on the modern ear. Both despite and because of all this, he remains my hero. Here's what he said when I told him about my exchange with Bill Gates:

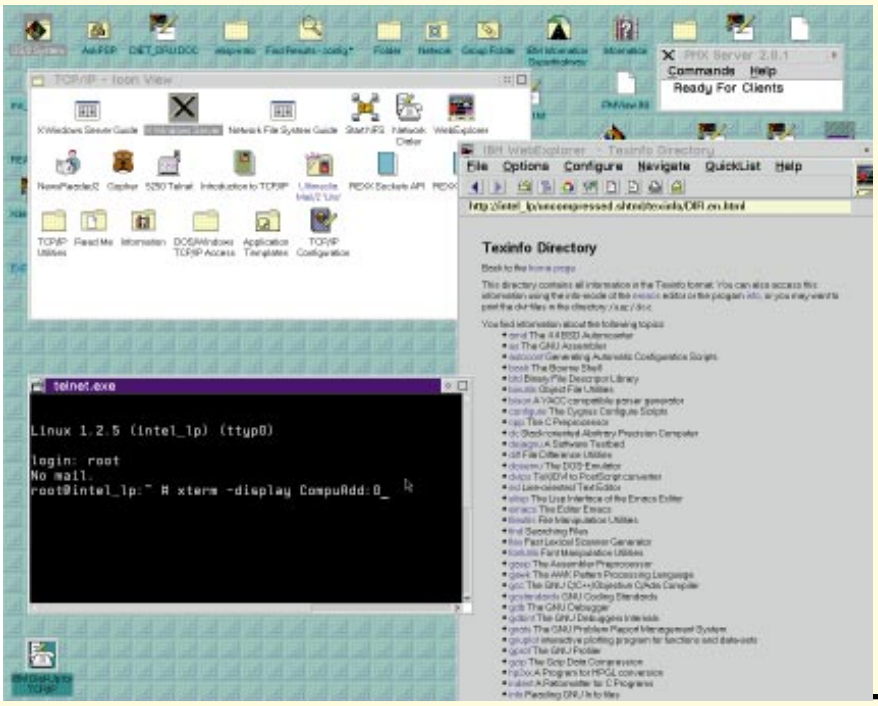
*"Sorry to disappoint you, but this is a common response. It comes from a common misunderstanding. Free software is a matter of freedom, not price. It refers to the freedom to copy and change software. The actual price of the computer is pretty much a moot point. You are, in fact, free to modify your computer, but few people want to risk any sort of modification beyond swapping components. If you change the wiring, you might break it, and it would be hard to fix. As for copying the computer, until someone invents a copying machine for computers, this is simply not feasible for people like you and me.*

*"When people think that free software is a matter of price, the idea seems silly to them; "Why not free hardware too?" is an obvious way to express their derision. But they just show they have not understood."*

I'm chastened. The importance of "free software" is not that you don't have to pay for it, but that it's "freely adaptable" by the user (because it comes with source) and "freely distributable" (because the licence terms encourage it). Nevertheless, as a side effect, GNU has made software cheap to get hold of, and look what's happening to hardware. Maybe Gates' wish is coming true. When I mentioned in this column early last year that I knew where to get obsolete but workable full height 1Gb drives for £150, there was a tremendous flurry of interest from readers. A year on, this has become the street price of some of the latest low-profile gig drives.

### Emacs just gets better

I've already explained some of the reasons why I feel Emacs is the ideal text processor. The reasons are multiplying every time I sit




*On the road to that integration of operating systems I hanker after, my Warp Connect system has become a window into my Linux box. We've already talked about using OS/2's Web Explorer to view HTML files on the remote machine* **(bottom right)**. *Telnet comes with Warp Connect: it's giving me a text terminal into Linux* **(bottom left)**. *IBM's X Server for OS/2* **(top right)** *adds another dimension. I'm using the telnet session to evoke xterm on the Linux box, but asking it to use my OS/2 CompuAdd machine to display it via the X Server*

## It's nice to be appreciated

David Sexton (D.R.SEXTON@tees.ac.uk) writes:
*I have been a reader of your column in PCW for a couple of years (about as long as I've had Linux to play with). Now that I (eventually) have Internet access, can I express my appreciation for the only column which covers the "'less popular" OSs.*

*I have a few suggestions/questions:*

**1.** *Now that OS/2 has its own column and NT hardly ever gets a mention, why not be honest and rename this the Linux column?*

**2.** *Could you persuade the CD editor to place a new distribution of Linux on the cover CD reasonably soon? A load of Linux users without (or with an unstable) Internet connection will be eternally grateful.*

**3.** *Caldera. Where do you get it from? Is it GNU or commercial, and if it's commercial, do they do (seriously huge) student discounts?*

Thanks very much for the kind words about the column, David. It's nice to know people are reading this stuff and getting something out it. I've thought about the predominance of Linux here, but I really do want to keep looking at 32-bit operating systems in general (and general 32-bit-ness). Linux happens to be an excellent and easily accessible example, and I know from the mail I get that a lot of readers are interested in it. But there are things about Windows NT (and about OS/2) that exemplify 32-bit goodness rather better, and I want to keep with them in a general way.

I've been getting a lot of mail asking for cover-mount Linux. Alas, I'm only a humble columnist – these production issues are decided by editorial luminaries. To whom, however, I will pass on the suggestion.

Caldera is proprietary — well, the Caldera proprietary stuff (which includes the NW client) sits on top of a free distribution of "RedHat Commercial Linux". By the way, the Linux usage of the word "commercial" in this sense simply means "industrial strength". At the time of writing, the Caldera Preview is still going cheap because it's still in Beta, but it's due to be released at around $100. You can mail them on info@caldera.com for details on how to get a copy.

down to use it. Did I mention, for example, the Alt-/ command? I should perhaps call it the "dabbrev-expand" function, as Alt-/ is only the standard binding (the key that evokes the function) — none of these functions really care which key you attach them to.

Type Alt-/ in the middle of writing a longish and/or technical word like "dabbrev-expand" and the function will search backwards through the text (and forwards too if you happen to be editing in the middle) and offer an intelligent expansion of the word. If the expansion is wrong, you just hit Ctl-/ to undo it — a least that's what I've been doing until today. Experimenting with dabbrev-expand this morning, I discovered that repeatedly hitting Alt-/ cycles through the various possible expansions of the root you've used elsewhere in your text. It will even start looking into text in other buffers. So if I've written "par", and Alt-/ offers "party", which is not what I want, a second Alt-/ gives me "parading" and a third try suggests "particularly", which is what I was after. That's a 12-character word typed in six keystrokes, and believe me, it's handy once you get going.

I've also just discovered more depth to Alt-/ (sorry to bore Emacs afficionados, who will know all this already, but this is exciting news to me). Type a complete word, follow it with a space and then hit Alt-/ once or several times, and what you get is a cycle of suggestions for the next word, based again on the sequences you've used elsewhere in the text. Say, for example, that wherever the word "crystallographic" occurs, it tends to be part of the phrase "crystallographic orientation". Once "cry Alt-/ has found "crystallographic", if you type space and hit Alt-/ again, dabbrev-expand will complete the phrase.

Emacs has some neat features you won't find in your costly word processor. It's also free software in the GNU sense of the word. But finally, look at the way these features are implemented, and look at their depth. There's a design philosophy at work here — for example, the recognition that expanding a string that ends in a space should be handled in the same way as a part-word string that doesn't.

### Into the Open

As regular readers of this column will know, Lasermoon, together with its German partner, Thinking Objects, has created the excellent Linux-FT distribution. What you may not know is that the partnership has gone into the X/Open Consortium as an Independent Software Vendor (ISV) member. X/Open is a standards body that issues branding for Unix operating

systems when they meet certain closely specified design goals. Ian Nandrha, boss of Lasermoon, tells me he is seeking compliance. This is not just because it's nice and orthogonal to adhere to standards, but because it's the only way to guarantee to support a product (how do you fix something if there's no way to test if it's broken?).

It's a big decision for a small outfit. Just joining X/Open costs a minimum of $22,500 per annum. This is optional: you don't need to be a member to carry out the branding exercises, but Ian wants a voice inside the Consortium. The cost of using the various X/Open brand names varies depending on the size of the ISV. Graham Bird, branding manager at X/Open, tells me that for a small company this could come to "as little as $25,000". And if they want to call the resulting conforming operating system "UNIX"? (note the all-caps spelling — that's the official X/Open brand name, although magazine sub-editors can always be guaranteed to turn this into "Unix". I'm inclined to stick with "Unix" too, when I'm talking about the family of operating systems in general, although I know X/Open hates this). Well, calling your product UNIX once it actually conforms will cost you another annual fee again, which depends on how many units you ship. For Ian, this will probably work out at about another $25,000.

Ian is potentially into the X/Open Consortium for the best part of $75,000. But Graham says this pales into insignificance alongside engineering costs such as rebuilding Linux so that it actually meets the specifications and passes the various tests. "There are a lot of us in X/Open who regard it as a big step forward to get Lasermoon into the community," he says. "But I suspect it's going to give him a few problems among his own people, who will regard him as having gone over to the 'forces of darkness'".

Graham Bird is delightfully frank about the forces driving X/Open. "There are largely three groups," he says, "those who have got religion, those who are there to observe and see what impact if anything it has on their business, and those who are there to slow it all down." One might guess that his last classification refers to certain hyphenated and three-letter acronym companies whose main goal is to push their own brand of Unix, not to improve interoperability.

Ian Nandhra is going to have to pay for all this out of sales, and I'm guessing that he'll end up selling his own version of Linux for something like £200 a shot. A bit steep, you might think. Bear in mind that Linux is distributed with source, able to be copied across a number of customers' workstations without licensing formalities, and with the same X/Open accreditation as operating systems such as AIX that command a four-figure price. For commercial customers it'll be a snip.

From inside X/Open, Graham sees this as "a really interesting debate. It will focus attention on what you're actually buying when you pay company XYZ a large amount of money for an operating system. Are you buying a warm comfortable feeling that they're there if it breaks, so it's OK to run your mission-critical systems on it? All those issues will start to come up. Do you want to supply the support internally, so it's valuable having access to the source? It's about the business model that people want to adopt."

Graham and Ian have been talking for about nine months. Initially Graham was sceptical: "I said, Linux? Nobody runs their business on Linux. But when I went and looked at the newsgroups, I saw that there really are companies — some of them quite surprising, like the BBC — who are prepared to do just that. Clearly what Lasermoon wants out of X/Open is the seal of approval, the goodness, that will put them on a level pegging with a $65 billion company like IBM."

**"What this industry needs is a bit of a shake-up. Unix needs to compete aggressively with other proprietary systems, it needs widely available applications, and at prices competitive to other systems"**

Once Ian gets this remarkable effort underway, I believe that businesses are going to start exploring the very real advantage of having the source code. Linux is already becoming a favourite operating system for Internet service providers. With the source code handy, they can do fixes and modifications in days that would take thousands of dollars and possibly months if they were running Unixes from IBM or Hewlett-Packard. These companies are obviously not going to go away, but they are going to have to think hard about what exactly they are giving their customers for their money.

"What this industry needs is a bit of a shake-up," says Graham. "Unix needs to compete aggressively with other proprietary systems, it needs widely available applications, and at prices competitive to other systems." The dread word Microsoft doesn't pass his lips, but clearly he is talking about Windows and Windows NT. "None of which is happening right now. To have Linux people demonstrating that they are serious about putting out a compliant product — and being prepared to stick with the discipline that inevitably needs — turns this into a serious platform."

Yes, but hang on a minute. Solaris, AIX, Digital Unix and HP/UX are serious platforms already. What's so special about Linux? What has impressed X/Open is the sheer volume. "Linux claims — and I've no reason to doubt it — to be shipping 40,000 units a month in North America alone," says Graham. "That makes everybody else's Unix shipments pale into insignificance."

I've avoided saying "Watch out, Linux is coming" in so many words, because the "serious Unix" people tend to laugh. But this view comes from inside X/Open, owner of the UNIX brand name. The volume is amazing, when you compare it with Sun, which probably ships something like 350,000 units a year worldwide. IBM and HP move around 100 to 200 thousand units apiece. The big volume Unix business has traditionally been associated with SCO, because of all the Intel boxes out there. But Linux is even outshipping SCO. "So these guys are coming in with half a million units a year," says Graham. "They could have a profound impact if they can be perceived in the market place as a serious, viable, dependable supplier."

That may not be quite how you'd characterise Lasermoon today. When Graham Bird met them he found "A typical development shop. They've got machines with no covers on, and yesterday's lunch is still sitting on the bench. A small organisation — two men, and the dog's part time." That was about six months ago. The company has grown since. "Ian says they're now 13 people, and the dog's full time," says Graham.

But even on that first visit, Graham was impressed by the company's "air of seriousness". He believes that Ian Nandrha carries credibility. "And he's got a lot of personal fans inside X/Open. There are a number of us here who are really rooting to get him on board and make it as easy as possible for him. To be frank, this could really wake things up."

**PCW Contacts**

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# Like wot I **wrote…**

**WP packages are becoming bloated with relatively useless gizmos of one kind or another. But features like AutoText and AutoCorrect can really improve your finished work, says Tim Phillips. Here is his guide to getting the best from the rest, and there are some top tips, too.**

At the moment, I'm preoccupied with wondering whether anyone is going to enjoy the idea of abandoning a word processor for something a little more manageable. It's the scenario envisaged by Oracle and others as a response to Microsoft's runaway domination of the applications market.

This isn't an either/or decision for most users. If you work at home, then yes, you will probably need the belt and braces solution of Microsoft Office for personal productivity. If, however, you work in the office then the word processor will, I believe, become a presentation tool, with all its formatting and functionality used for that. For communicating using text, the modern word processor is vastly over-specified, and the stream of queries I receive from users with quite basic problems must be a symptom that something is wrong.

### Diagnosis: Featuritis

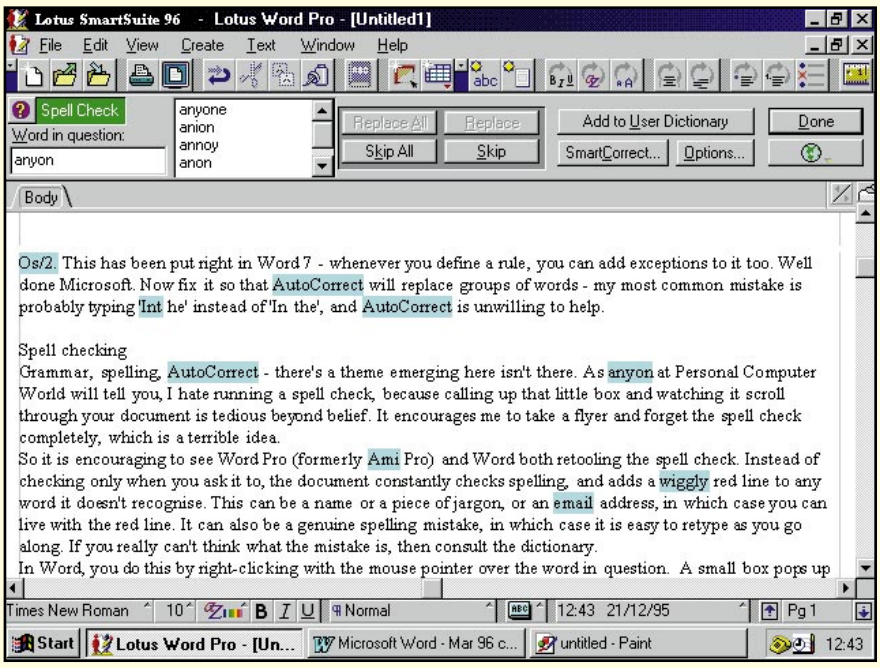
One problem is that this industry rarely solves anything without adding another feature, when the real problem is to do with using the existing features. Extremely useful additions like AutoCorrect and AutoText get buried half way down a middle menu: I use a word processor all the time and can't find them.

What a relief it would be for me to find an application that would enable me to use features only as I needed them — basic text, a word count, spellchecker, cut and paste — and know that I can get more *when I need it*, instead of having to install 47Mb of Word Pro.

This is the model for both the "network computer" model, and the grand plan of bite-sized modular software conceived by the OpenDoc consortium. Unfortunately, OpenDoc is looking rather lame now that Novell has backed out of applications, and IBM and Apple have other problems to fix first. I hope the rest of my career writing about word processors isn't going to be a constant reminder of new features in increasingly bloated software, and for this reason as much as any other, I'm all for slim applications which aren't stored on a massive local hard disk.

### Grammar, schlammer...

Grammar checkers are a classic symptom

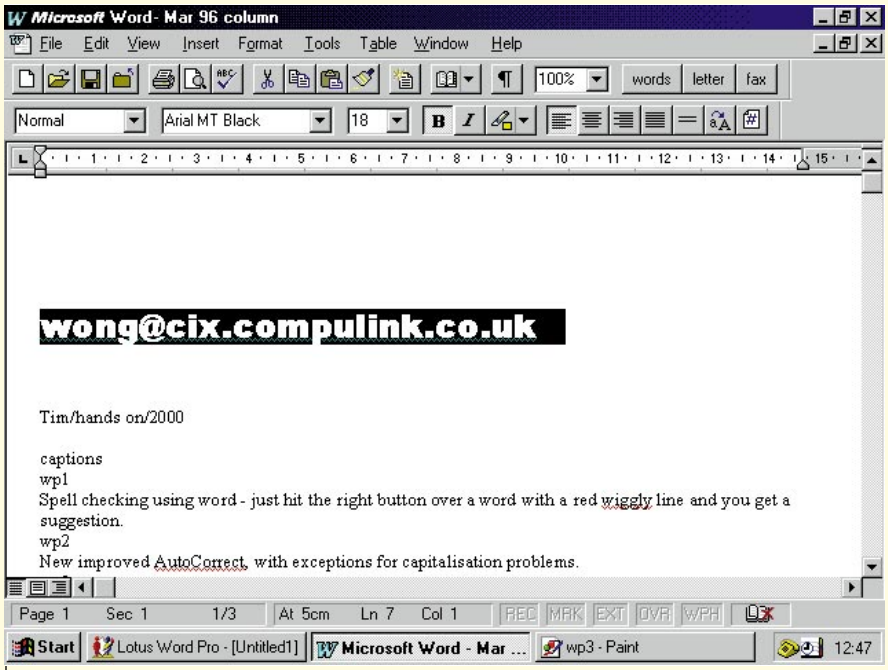



*Spellchecking in Word Pro avoids the nasty dialogue-box idea in favour of a more elegant solution*

### Just a little one

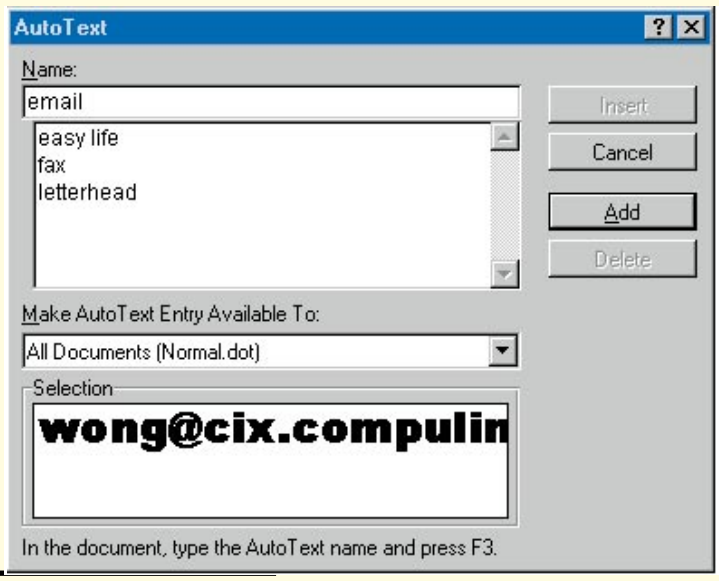
Just one problem to solve this month: John Li of Maidstone and Erica Carlton of the Wirral have both had trouble word-wrapping using WordPad.

The secret lies in the WordPad settings dialogue which I mentioned briefly when I reviewed the software, not too long ago. You set the options for each type of file using View, Options. The wrap can be to the ruler, to the windows or none at all, but it has to be set for each type of file individually. Don't ask me why; it just does.




**Above**
*AutoText is easy, when you know how. First highlight the text...*

**Right**
*...then bring up the AutoText dialogue box and name it*



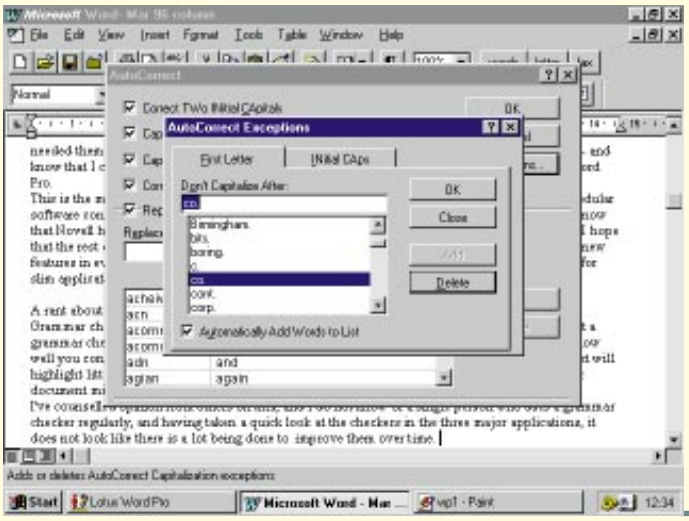

## Patching things up

This is not as bad as forgetting that Ctrl-Tab exists, as I did recently (you can stop mailing me to complain about that now), but a bug with my DEBUG routine to make a patch for EDIT was spotted by Walter Blanchard: *"Somebody has probably already told you but the patch for EDIT you gave in the October issue doesn't quite work the way you gave it; at least, not on my machines. Simple-minded folk like me who don't use DEBUG that often might like to know a small correction.*

*"I found the correct sequence to be…*

```
-r ds
DS 0A57   (in my case)
:         (the problem is that if you type in the 2a57...etc at this colon it
          simply comes up with ERROR, so you have to press enter again)
-e 2a57:dd70"*.*",0
-w
WRITING 2F705 BYTES
-q
```

*…and it works."*




*New improved AutoCorrect, with exceptions for capitalisation problems*

### A note about AutoCorrect

It's roughly a year since I first raved about AutoCorrect and I can't tell you how many keystrokes it has saved me since. For those of you who are new to the concept, it's like the aforementioned AutoText but serves to correct common mistakes.

If, like me, you regularly type "yuo" instead of "you", you can have this automatically corrected by Word as you go along. WordPerfect users have a similar luxury. This makes you into a terrible typist but shortens the dreaded spellchecker enormously.

When I reviewed the Word 6 AutoCorrect, I complained that it was sometimes difficult not to have of featuritis; who actually needs one of these 5Mb wastes of disk space, anyway?

No matter how well you configure a grammar checker, its limited pattern-recognition way of looking at your text will highlight little more of use than a few clichés and long sentences. A careful read through your document would be more effective.

I don't know of a single person who uses a grammar checker regularly. Having taken a quick look at the checkers in the three major applications, it doesn't look like there is a lot being done to improve them over time. If the trend were not towards selling monolithic applications, then we could sell grammar checkers as add-ons, tailored to fit closely to word processors. My advice: skip them, and save some precious disk space.

### Word for Windows and AutoText

Everyone has lines, pages or even layouts that need constant re-doing, and the well-hidden AutoText feature in Word for Windows falls into the "extremely useful but under-used" category which solves this particular problem.

Getting started on AutoText couldn't be simpler. Just type some dull and repetitive text (if you're thinking "he means this column", I'll be round to knock you about a bit), highlight it and select AutoText from the bottom of the Edit menu. Up pops a dialogue box to show what you have selected and picks the beginning of the selection as a suggested name. You either accept this (it doesn't have to be one word, it can be a phrase) or pick your own name, then select Add for it to become an AutoText entry.

When you next need this text, simply type its AutoText name, hit F3, and up pops the text. It's very quick, too, which can't be said for all the features in Word for Windows, and has a variety of uses.

## Tim's Macro Club

A thin entry this month, so I'm expecting better from you in the future —*don't forget, there are prizes on offer*. Thanks for the positive feedback, though; it seems a lot of you are using the macros we print.

As a treat, I'm publishing a three-part macro for automatic scrolling in Word. It's a simple solution, and I quite enjoyed it. I also like it because it comes from Belgium where I recently spent a pleasant weekend. If ever word processors get too frustrating, I recommend a stroll round Bruges to take the pressure off.

*"The purpose of the following macros is to scroll the current document in the WinWord window automatically,"* says V Debroey, of Landen. *"This allows you to read it 'hands-off', without having to hit the down arrow or click in the scrollbar."*

The first macro turns on this "auto-scrolling":

```
——-begin macro "Scroll"
Sub MAIN
  Print "AutoScroll On"
  if IsMacro() = 0 then LineDown 2
  OnTime Now() + 0.00002, "Scroll"
End Sub
——-end macro "Scroll"
```

It moves the cursor down two lines, then uses the "OnTime" command to call itself after about two seconds, thus eventually moving down to the end of the file.

To adjust this macro to your reading speed, you can experiment with the numbers after LineDown and OnTime (the fraction in OnTime is a fraction of a day's length).

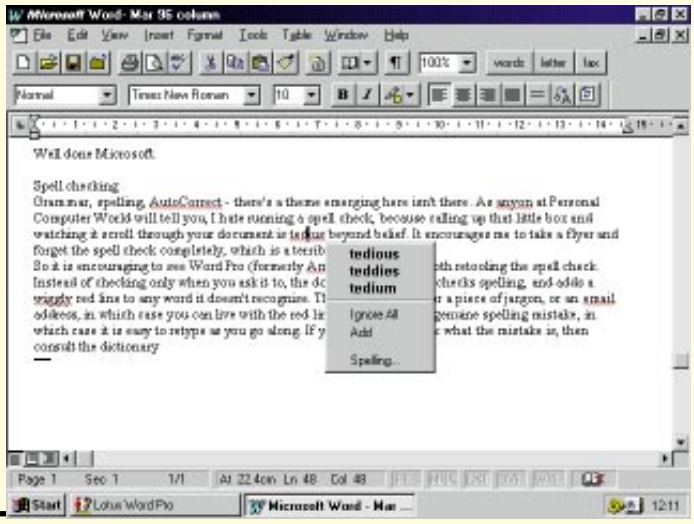
You need another macro to stop auto-scrolling:

```
——-begin macro "ScrollStop"
Sub MAIN
  Print "AutoScroll Off"
  OnTime Now(), "StopScrolling"
End Sub
——end macro "ScrollStop"
```

This macro calls a third macro, "StopScrolling", in its OnTime command. The StopScrolling macro doesn't do anything; it's just there as a target for OnTime:

```
——begin macro "StopScrolling"
Sub MAIN
  'nothing here, really
End Sub
——end macro "StopScrolling"
```

Assign the first two macros to a hot key; Load a (lengthy) document, and hit the hot key for "Scroll"; sit back and read. All normal Word commands are still available, but I don't recommend editing the file while the cursor is moving all the time: hit the hot key for "ScrollStop" to halt the process. Unfortunately this doesn't work in Word 2 — other versions, anyone?




*Spellchecking using Word — just hit the right button over a word with a red wiggly line and you get a suggestion*

contradictory rules. While I often make the mistake of typing two capital letters at the beginning of a sentence and would like to AutoCorrect this, I don't want to have it constantly correcting "OS/2" to "Os/2". This has been put right in Word 7; so whenever you define a rule, you can add exceptions to it as well. Well done, Microsoft. Now fix it so that AutoCorrect will replace groups of words — my most common mistake is typing "Int he" instead of "In the", and AutoCorrect is unwilling to help.

## Six tips for AutoText

- Pick a name that's easy to remember and don't bother with unusual capitalisation. For example, "address" is easier to get right than "TimHomeAddress for letter". When you type "address" in a document, it won't select the AutoText replacement unless you hit F3 immediately afterwards.
- Use it for formatted text too; I have a letterhead which I have as an AutoText entry.
- Attach useful AutoText entries to the toolbar. You do this by selecting Customise, Toolbars and scrolling down to the bottom of the list. There you find AutoText, and the dialogue pops up with your list of entries, any one of which you can drag to the toolbar.
- Fields can be nested in AutoText. So for generating letters, include today's date below your home address as one AutoText entry — it will not only fill in the address, but add the date as well.
- I'm not a great fan of developing hundreds of templates for personal use, so I have a fax cover AutoText too.
- AutoText can be added retrospectively. If you develop an outline, use AutoText names for standard text items. When the outline is finished, highlight the item, hit F3 and develop it quickly.

### Spellchecking

As the sub-editors at *PCW* will tell you, I hate running a spellcheck, because calling up that little box and watching it scroll through your document is tedious beyond belief. It encourages me to take a flyer and forget the spellchecker completely, which is a terrible idea.

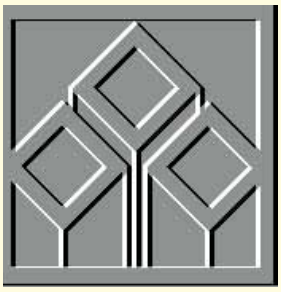
So it is encouraging to see Word Pro (formerly Ami Pro) and Word both retooling the spellchecker. Instead of checking only when you ask it to, the document constantly checks spelling, adding a wiggly red line to any word it doesn't recognise. This can be a name, a piece of jargon or an email address, in which case you can live with the red line. It can also be a genuine spelling mistake, in which case it is easy to retype as you go along.

If you really can't think what the mistake is, then consult the dictionary. In Word, you do this by right clicking with the mouse pointer over the word in question. A small box pops up with the best alternatives and an option to go to the full spellchecker window if they don't work — very quick and simple.

Similarly, Lotus blocks all the words it doesn't recognise in blue text, but waits for you to call up the spellchecker. Many people find this less intrusive but I prefer the Microsoft way. Lotus doesn't use the right mouse button but it is still a quick and neat spellchecker and a big improvement on the orthodox method. I'd recommend either package on this basis.

## PCW Contacts

And that's that for this month. Surface or airmail to *PCW*, otherwise I'm on email at **wong@cix.compulink.co.uk** and **CompuServe 100436,3616**



# Playing it off-key

**Stephen Wells** **waxes lyrical about entering and stacking data without an arpeggio of keystrokes, by composing your own macros.**

We start this month with a query from Dr H Baillie-Johnson of the Norfolk & Norwich Hospital, who emailed me to request "…an easy way to enter data into calculation cells in the top few rows of a spreadsheet, and then, without playing an arpeggio of keystrokes, have the row stored in the bottom of the sheet, stacking upwards."

He continues: "I'd like to enter a row of cells, see the results, and then dump the contents onto the top of the stack, leaving the top of the sheet clear for the next row of data entry. I use either Excel 5 or Lotus 1-2-3 Version 3.1."

Having at an early age passed the Grade II, Pianoforte exams of the Royal College of Music myself, the arpeggio metaphor tickled me. In the same way that you can record a tune as you play it, with Excel or 1-2-3 you can record your actions and from then on just play them back as often as you wish. Similarly, you can write down your composition. The song sheet in this case is a macro. Or you can get the spreadsheet to write it — which is what I did in this instance.

As Dr Johnson sent no more than the above, I've constructed an example on the lines of his description — *but please take note that medically-speaking it is, of course, nonsense* (see *Fig 1*).

The entry line is Row 1. The only calculation is that the dates in Column F are 90 days after those in Column A. This is simply to check that a transferred formula works. The "stack" is currently in rows seven to 13. As requested, the new row will shift down to the top of the stack (row seven) and the other archived data lines will move down.

I happened to use Excel 7, but Excel 5 works in a similar way. You choose Tools, Record New Macro, and give the new macro a name and shortcut key. I chose "Move_Row" and Ctrl+m.

You can assign your new macro name to appear on the Tools menu. Another option lets you store the macro under "This Workbook." That means a tab with the "Move_Row" name appears automatically at the foot of your screen whenever you load your workbook. Then you press the keystrokes you want the macro to emulate. I pressed the keys in *Fig 2*.

It's easy to see what's happening: the cursor zips back to square one, goes from there down to row seven and slips in an extra row; then it jumps back to cell A1. The macro then highlights the contents of that row, cuts it and pastes it down on row seven. Then the cursor goes back to the start, so you're ready to enter a new row.

If you click the Move_Row tab, you'll see a listing in Visual Basic as shown in *Fig 3*. Obviously, rather than make the keystrokes initially as I did, you can compose your macro in that language if you want to.

This solution is for the problem as posed. But if you don't need the entry line, you could have the macro open automatically with a dialogue box, then add the entered data to the stack.

### Preaching to the unconverted

An email from Denzyl Pereira tells me he has to convert a lot of *.wks files to *.xls files and he's been loading them and re-saving them, one at a time.

He says: "This is tedious to say the least — is there a macro that can do the lot in one go? I know Word has one that converts a whole heap of .SAM files to .DOC files but Microsoft has been unable to help me on this."

I have Word 7 which includes the equivalent macro CONVERT7.DOT. It does indeed offer a wide choice of word processor file extensions for conversion.

Interjecting a little complaint; I find that in Office 95, Word 7 has all kinds of well-designed, upmarket extras which Excel 7 doesn't have. Ease of changing the dictionaries and formats from US English and styles to UK English and protocols is just one of many details lacking in Excel.

You get the impression from the Windows 95 literature that you only have to set the preferred date format in Control Panel, Regional Settings (say, d/M/yy instead of MM/dd/yy) once, and then everything will conform. Hell, I can't even get the various modules of Office to conform to that. One day I also hope to make Microsoft's own Exchange, and Schedule Plus, both offer the same address book. I have to keep one for each although the flagship module,

**Fig 1 Medical matters**

*Example of a spreadsheet for a hospital which uses a macro to move a newly-entered row*

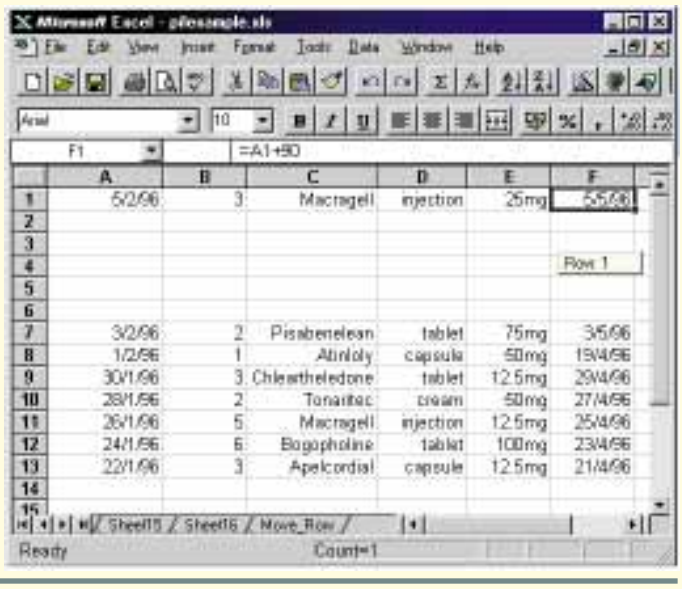


**Fig 2**

*The keystrokes recorded to make a macro which moves a row*

```
Ctrl+Home
Down Arrow x 6
Alt+I,R
Ctrl+Home
Shift+Ctrl+Right Arrow
Alt+E,C
Down Arrow x 6
Alt+E,P
Ctrl+Home
```

**Fig 3**

*The macro automatically recorded from Fig 2*

```
‘ Move_Row Macro
‘
‘ Keyboard Shortcut: Ctrl+m
‘
Sub Move_Row()
    Range(“A7”).Select
    Selection.EntireRow.Insert
    Range(“A1:F1”).Select
    Selection.Cut
    Range(“A7”).Select
    ActiveSheet.Paste
    Range(“A1”).Select
End Sub
```

Word 7, naturally offers addresses from both books! But I digress...

If you want to study that macro, Denzyl, and you have Word 7 go to File, Open,

```
c:\msoffice\winword\macros\
convert7.dot.
```

Then choose Tools, Macro, BatchConversion, Edit. With a good knowledge of Visual Basic and the patience of Job you could probably convert it to do what you want.

### Colour me blue

In the December issue, I wrote about translating SuperCalc files to be read in Excel and maintained that you couldn't easily carry forward formulas. This prompted several emails, including one from Tony Beckett with a jolly good tip in it.

He says: “You can save the SuperCalc file and instead of using the default .CAL suffix, impose your own suffix of .WKS.” He adds: “This has never caused me any problems apart from the cosmetic one that when such a file appears in Excel, the text is coloured blue.”

I tried this with SuperCalc 5.1 and Excel 4 and he's right on both counts. The Export command offers only the optional extensions XDIF, DIF, CSV and dBase. But if you Save in the regular way but edit the filename.cal to filename.wks, SuperCalc immediately switches to Export by itself and saves a Lotus file. Excel will import that file with most formulas intact and the figures are indeed, initially, blue.

The main formulas which don't translate easily are in the date group. But I've solved this in the past by opening a dummy column (or row) with the date entries plus 60. Then I copy that column (or row) back over the original.

### It's SuperCalc... but not as we know it, Tim

Another email on the subject, from Tim Wood, who adds the phrase “Accountancy, but not as we know it”, says he prefers the DIF method (which I'd described) because “SuperCalc's WKS files load into Excel with zero column width” — not something I had encountered myself. He continues: “We use both programs in our busy accountancy office.

“We have found printing the biggest problem. SuperCalc ‘remembers’ the last print area used whereas Excel uses the current, highlighted area. And Excel named ranges cannot, apparently, be used for printing via Print Manager which requires a view to be named for this purpose and then entered as well on page setup. This is so long winded!

“We have resolved printing problems by naming each (or multiple) ranges to be printed. For example:

```
“Print_Profit”
```

Running this little macro to directly display the named ranges in print preview:

```
Print_Selection
=PRINT(1,,,1,,TRUE,,,,,,1)
=RETURN()
```

The macro is saved in a hidden personal workbook and run via a custom toolbar button.”

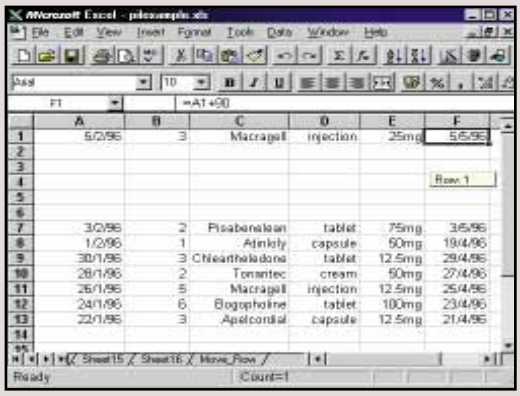
Tim's company must be slow to invest in current hardware, because he continues: “For serious number-crunching, SuperCalc is vastly superior in terms of both speed and simplicity, and is still used most of the time (by choice) until a high-quality report is required.”

The other kind word he has for Microsoft's spreadsheet is: “Excel's strong point is the multiple pages of a workbook which, ultimately, one cannot do without.”

But then we part company when he closes with: “Lastly, with the amazingly low cost of quality, double-entry accounting software I would say that only a professional masochist would keep primary accounting records in a spreadsheet nowadays!”

This might be true if you are an accountant setting up the books for a client, but I can think of numerous situations where locked-in software just doesn't give the

## Finding your document



The most frequently-used dialogue box in any Office application is File Open. So every module of Microsoft Office Version 7.0 uses the same new, improved, version of it called FastFind. There are not only options to search by file name, type or date but additionally you can enter just one word or other property and find the file which contains it. Here, I've used the fictional drug Macragell in Excel 7 and FastFind has zeroed in on the correct worksheet to open.

The File Open box looks exactly the same in Word 7 and you can find Excel files in Word and Word files in Excel.

If the search finds a number of applicable files, you can differentiate between them using a choice of buttons: List (by name and icon), Details (size, type and date), Properties, and Command and Settings.

You can even preview a segment of the file, as shown here, assuming that you've checked Save Preview Picture in the actual file under File, Properties.

results you want, in the time you've got to spare. I have reviewed dozens of accounting packages over the years and I've never yet found anything as quick and easy to use as my own current Excel 7 multi-paged workbook.

I can immediately show results by account, day, month, quarter or year, and my financial statements and tax records are always current. Accounts packages, which are basically crippled databases designed to be used by anybody, are like frozen dinners — superficially attractive but unsatisfying, although they can be a boon to large companies and those small business people with little knowledge of accounting and spreadsheets.

### Driving him scatty

I have been entering into some correspondence with Chris John, of Richmond, on the subject of charting. He originally emailed me his problems in trying to get Access to make a graph from his Paradox data: he wanted his x axis to be a time series, although his time intervals were irregular. I suggested he didn't really want a time series but could send me a disk with his data, in a form I could import to Excel.

He later sent a printout of his table and the dates were, on average, 95 days apart. But they ran from 0 days (i.e. two entries on the same day) to one gap of 184 days. He also enclosed a hardcopy of a successful result in Excel using a scatter chart joined by a line. I've recreated a simplified form of this in *Fig 4*. You'll see that Excel gives you an x axis with dates spaced 200 days apart in this example, plots the correct numbers on the correct original dates and then joins up the points.

Eric is semi-happy; he's pleased to have found a solution, but teed-off that he can't get Access to give him the same result. Ah well; it's "horses for courses".

### Science lesson

Bijan Mohandes emailed me to ask how to customise Excel's scientific format.

The scientific format is used for particularly large and small numbers. All it does is to show the number multiplied, or divided, by powers of ten. For example, the number 0.000678 which could also be written as 6.78 / 104 (6.78 divided by 10,000) is shown in scientific format as 6.78E-04.

The first part, to the left of the E, is called the "mantissa". The part to the right of the E is called the "exponent". If the exponent is negative, as in this case, it means that the value is divided by ten to the given power. If the exponent is positive, as in 6.78E+04, that translates to 6.78 * 104 or 67,800.00.

If the actual value is negative, as in -6.78*(10^4), then the minus sign appears to the left of the mantissa so: -6.78E+04.

These examples are all shown in Excel's standard Scientific format to two decimals, which is the same as the Custom format set up like this: 0.00E+00.

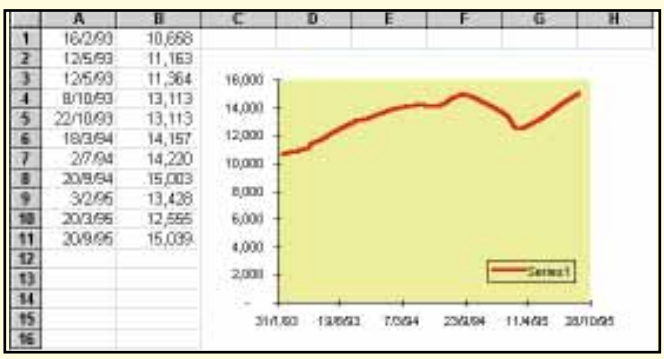
The Scientific format can also be selected with different decimal numbers. The number 0.0678, in Scientific format to three decimals, is displayed as 6.780E-02. This is the same as the Custom format set up like this: 0.000E+00. If you set up the Custom format with an extra zero in the exponent like this, 0.000E+000, then 6.780E-002 is displayed.

If you choose to prepare your own Custom format, the digits can be represented as 0 or # or ?. An 0 (zero) means the digit will always be displayed, even when it's a zero. The # sign suppresses zeros at the beginning or the end of the number. The ? sign after the decimal point displays a space if it is zero, and at the end of the number to make the decimal points line up in a column. It is also good for fractions that have varying numbers of digits.

Bijan specifically wants his exponents in multiples of three as he uses the numbering system kilo=E3, milli=E-3, mega=E6, micro=E-6. Don't we all? At the moment, when he enters -00000009, Excel is responding with -9.00E-07 and he wants this value to display as 900E-9. Choose Format, Cells, and you'll see that the default is Scientific, two decimal places. Just change it to Custom 000.E+0

Incidentally, before I get buried in beefs from bearded boffins, let me clarify that Excel only promises a number precision of 15 digits.

## Fig 4 Scattering wisdom

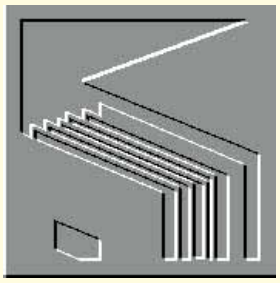


| | A | B |
|---|---|---|
| 1 | 16/2/93 | 10,668 |
| 2 | 12/5/93 | 11,163 |
| 3 | 12/5/93 | 11,364 |
| 4 | 8/10/93 | 13,113 |
| 5 | 22/10/93 | 13,113 |
| 6 | 18/3/94 | 14,157 |
| 7 | 2/7/94 | 14,220 |
| 8 | 20/9/94 | 15,003 |
| 9 | 3/2/95 | 13,428 |
| 10 | 20/3/95 | 12,555 |
| 11 | 20/9/95 | 15,039 |

*A line scatter chart with an x-axis of regular time intervals produced from the irregular dates in column A*

## PCW Contacts

**Stephen Wells** welcomes comments on spreadsheets and solutions to be shared. Send them to *PCW* Editorial at the usual address or **Stephen_Wells@msn.com**



# **meter** matching machines

**Mark Whitehorn examines a problem thrown up by a meter reading database, and sings the praises of indexing — this month looking at how it can speed up data retrieval.**

Last month I started to write about ways of speeding up your database. This month I will digress slightly to cover a problem which has arisen since then. A colleague of mine, Stephen Elwell-Sutton, was building a database in Access to store meter readings from various electricity meters. These can be stored in a table like that in *Fig 1*:

**Fig 1 Meter readings**

| Meter No | Date | Reading |
|---|---|---|
| 1 | 18/5/91 | 20 |
| 1 | 11/11/91 | 91 |
| 1 | 12/4/92 | 175 |
| 1 | 21/5/92 | 214 |
| 1 | 1/7/92 | 230 |
| 1 | 21/11/92 | 270 |
| 1 | 12/12/92 | 290 |
| 1 | 1/4/93 | 324 |
| 2 | 18/5/91 | 619 |
| 2 | 17/9/91 | 712 |
| 2 | 15/3/92 | 814 |
| 2 | 21/5/92 | 913 |
| 2 | 17/9/92 | 1023 |
| 3 | 19/5/91 | 20612 |
| 3 | 11/11/91 | 21112 |
| 3 | 15/3/92 | 21143 |
| 3 | 21/5/92 | 21223 |
| 3 | 17/9/92 | 21456 |
| 3 | 21/3/93 | 22343 |

using [Meter No] and [Date] as the primary key. The people using the database wanted, quite reasonably, to see the data in the sort of format shown in *Fig 2*, from which other information, such as the days between readings, and the usage per day, can be calculated.

Each record in this table is made up of data taken from two records in the original table, and the relationship between the two records concerned in each case is as follows. Consider the last record in the original table to be the "current" record. In order to generate a record in the second table we scan backwards, looking for the first record which has the same meter number and a date which is lower in value that the current record.

**Fig 2 Another format**

| Meter No | Date | Current Reading | Previous Reading | Units used | Date of Previous Reading |
|---|---|---|---|---|---|
| 1 | 11/11/91 | 91 | 20 | 71 | 18/5/91 |
| 1 | 12/4/92 | 175 | 91 | 84 | 11/11/91 |
| 1 | 21/5/92 | 214 | 175 | 39 | 12/4/92 |
| 1 | 1/7/92 | 230 | 214 | 16 | 21/5/92 |
| 1 | 21/11/92 | 270 | 230 | 40 | 1/7/92 |
| 1 | 12/12/92 | 290 | 270 | 20 | 21/11/92 |
| 1 | 1/4/93 | 324 | 290 | 34 | 12/12/92 |
| 2 | 17/9/91 | 712 | 619 | 93 | 18/5/91 |
| 2 | 15/3/92 | 814 | 712 | 102 | 17/9/91 |
| 2 | 21/5/92 | 913 | 814 | 99 | 15/3/92 |
| 2 | 17/9/92 | 1023 | 913 | 110 | 21/5/92 |
| 3 | 11/11/91 | 21112 | 20612 | 500 | 19/5/91 |
| 3 | 15/3/92 | 21143 | 21112 | 31 | 11/11/91 |
| 3 | 21/5/92 | 21223 | 21143 | 80 | 15/3/92 |
| 3 | 17/9/92 | 21456 | 21223 | 233 | 21/5/92 |
| 3 | 21/3/93 | 22343 | 21456 | 887 | 17/9/92 |

Given that the data is sorted as shown in the first table, this will be the record above the current one. This matching process fails if we consider the record for meter three taken on the 11/11/91, since the record above it is for meter two.

So, on the face of it, the algorithm for solving the problem was trivial:

- Start at the bottom of the table.
- Repeat
- For each record look at the one above. If it contains an identical meter number, use the two records to generate a record in the answer table.
- Move up one record, until at the top of the table.

In fact, you can work from the top to the bottom in a similar manner if you prefer. Fine. Except that the solution is inelegant, if not to say offensive.

Why? Well, one of the major principles of the relational model is that the position of a record in a table is of no significance whatsoever. We are supposed to be able (and indeed willing) to locate the value in a field solely by reference to its table name, field name and primary key value. Just because a value in a field happens to be in "the record above the current one" doesn't mean we automatically know it's the one to use. SQL, for example, doesn't allow you to reference the records above or below the current one; indeed SQL has no concept of the "current" record. Instead it performs operations on sets of records rather than on individual ones.

Typically, the programming language supplied with most RDBMSs will allow sequential record processing, and either Stephen or I could have solved the

## Fig 3 Solving the problem with SQL

**1.**

```
DELETE *
FROM Readings2
```

**2.**

```
INSERT INTO READINGS2 ( [Meter No], [Date], Reading )
SELECT [Meter No], [Date], [Reading]
FROM READINGS
ORDER BY READINGS.[Meter No], READINGS.[Date]
```

**3.**

```
SELECT DISTINCTROW [Meter No], Date, Reading, [Count]+1 AS [Incremented
Count]
FROM READINGS2
```

**4.**

```
SELECT DISTINCTROW READINGS2.[Meter No], READINGS2.Date,
READINGS2.Reading AS [Current Reading], [3 Renumber records in a
dynaset].Reading AS [Previous Reading], [Current Reading]-[Previous
Reading] AS [Units used], [3 Renumber records in a dynaset].Date AS [Date
of Previous Reading], [READINGS2].[Date]-[3 Renumber records in a
dynaset].[Date] AS [Days since last reading], [Units Used]/[Days since
last reading] AS [Daily Usage]
FROM [3 Renumber records in a dynaset] INNER JOIN READINGS2 ON ([3
Renumber records in a dynaset].[Incremented Count] = READINGS2.Count) AND
([3 Renumber records in a dynaset].[Meter No] = READINGS2.[Meter No])
```

problem with Access Basic, but instead we looked for an entirely SQL-based solution. And in case you think this problem has wandered into the realms of academic theory, remember that set operations have the potential to be *much* faster than sequential processing, so we were looking not only for a more elegant solution, but a faster one.

The solution we came up with is as follows:

The data was stored in a table called READINGS. We created a table with an identical structure to READINGS, except that it had an additional field called [Count] which was of type Counter. This table was called READINGS2.

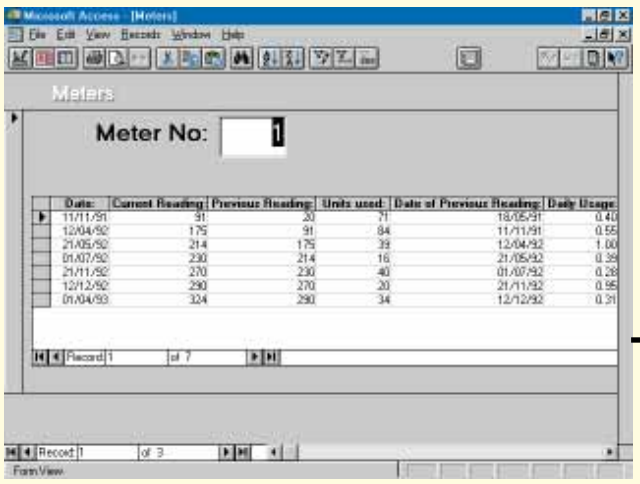
(As an aside, it is a characteristic of Access that if you add data to a table which has a counter field, Access will automatically increment the counter field, sequentially numbering the records. If the table has been used before, the numbers won't start at 1, but they will still be sequential.)

Then we wrote a series of SQL statements which did the following:

**1.** Cleaned out any existing data from READINGS2 .
**2.** Copied the data from READINGS to READINGS2, keeping the order identical to that dictated by the primary key.
**3.** Created a Dynaset in which the values in the counter field were incremented by one.
**4.** Joined READINGS and the Dynaset by Meter No and the Counter to produce an answer table which then contained the desired results.

The important parts, and hopefully the rationale, should become clear if you study the sample data.

The SQL was as shown in Fig 3.




*A master/sub form which presents the "meter" data in a more acceptable manner*

The table names are overlong, I agree, but this means they make more sense in the data which is on the cover disk as METER2.MDB.

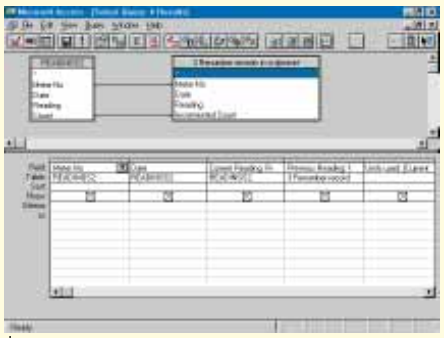
So, we completed the task we set ourselves, and solved the problem with SQL. Hopefully this is faster than sequential processing would be. Nevertheless we are unhappy with the result, because we cheated. Somewhere in there is a nasty, cheap little trick which offends the relational database model.

Three questions arise.

1. Can you find the cheat?
2. Can you do better?
3. Are we missing something vital?

It seems to us that this problem is representative of a broader class of problem: "What is the best way of handling records in a relational database that have to reference each other?"

Clearly there are other solutions, such as storing both the current and previous reading in each record, but they all seem to conflict with the relational model as well. Surely someone, somewhere has worked out a solution to this in the past? Anyone out there know what we are missing?



*The GUI version of the final SQL statement*

## PCW Contacts

**Mark Whitehorn** welcomes readers' correspondence and ideas for the Databases column. He's on **m.whitehorn@dundee.ac.uk**

## Tips & Tricks

### From Shane Devenshire:
### Selecting an entire form or report without using the menus in Access

*When you are in the Form or Report design mode of Access, you often want to select the entire form or report. To do this you can click the white box in the top left corner of the form or report. Alternatively, if you can see any space to the right hand edge of the form or report all you need do is click it. Whatever you click to the right of — the Detail section, Page Header — they all work. If you can't see that area you can click in the area below the Report Footer; this will also select the entire form.*

*In Access II you can also click or double click anywhere on the ruler that has no objects directly below. Double clicking on the horizontal ruler will bring up the form's Property dialogue box.*

### From Damian Luby

*I am looking after a database which belongs to the estate I live in. I would like to have the primary index (and sorting) put the address in proper sequence.*

*I have the address in the following format:*

*1 Glenbourne Road*
*2 Glenbourne Road*
*11 Glenbourne Road*
*12 Glenbourne Road*

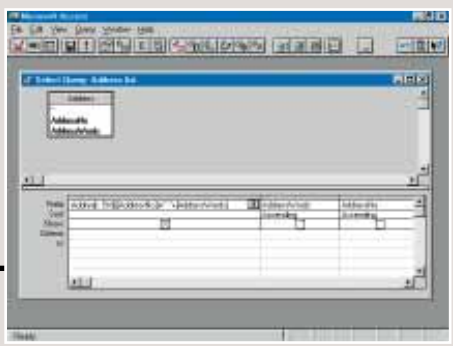
*After sorting, the no 11 house is put before the no 2, naturally enough. Can you think of an easy work-around for this problem? I am using Microsoft Access 2.0.*

Try splitting the address into two fields:

AddressWords
AddressNo

and declare the field called AddressWords to be of data-type Text and AddressNo to be of type Number.

Access allows you to combine the two fields to form a single primary key, so that you can make AddressWords AND AddressNo the joint Primary key. The fields will then sort properly.



*The query which lists addresses in a tidy, sensible fashion*

### To which Damian replied:

*Thanks, but how can I combine the house no. & address field to be sorted when using queries in Access 2.0, so the addresses come out in order?*

Build a new query and in the first column write:

```
Address: Str$([AddressNo])+" "+[AddressWords]
```

The function Str$ turns the numeric value in AddressNo into text and the rest of the expression simply adds that text value to a space character and then to the text in AddressWords. This causes values like:

```
7 Acacia Gdns.
```

to appear in the first column of the answer table. However, sorting on this column will be unsatisfactory because Access will treat the numeric values as text, which means we are back to the original problem. Clearly what we want is the addresses sorted first by street name, then by number, as in the addresses table. In order to achieve this, add the two fields AddressWords and AddressNo to the answer table (in that order) and set each in turn to be sorted in ascending order.

**Addresses**

1 Acacia Gdns.
7 Acacia Gdns.
12 Acacia Gdns.
13 Acacia Gdns.
17 Acacia Gdns.
24 Acacia Gdns.
241 Acacia Gdns.
2 Belmont Road
6 Belmont Road
7 Belmont Road
12 Belmont Road
56 Belmont Road
214 Belmont Road

Since AddressWords is the first sorted field in the answer table, reading from left to right, the data will be sorted first by the values in that field. The data in the AddressNo field will be used to sort data with identical values in the AddressWords field. However, since AddressNo contains numeric values, the sort will proceed correctly.

Finally you can render AddressWords and AddressNo invisible in the answer table by deselecting the "Show" option. Even deselected in this way, they will still be used to sort the data. For non-Access users, the SQL for this query is:

```
SELECT DISTINCTROW Str$([AddressNo])+"
  "+[AddressWords] AS Address
  FROM Address
ORDER BY AddressWords, AddressNo;
```

# ...It's **how** you say it

**If your business involves publishing anything, you'll know that style is everything. Gordon Laing looks at ways DTP packages can make it easier and more efficient to project the image you want.**

It's time for some long overdue DTP tips. I'm going to look at style and consistency in documents this month, using the facilities DTP has to offer.

Look at any regular publication, whether it's a newspaper, magazine, catalogue or even fax cover sheet, and, if it does what it's supposed to do, the person/product/company's image will be as clear as day. Their design and style is like a calling card, identifying them immediately and marking them out from the crowd.

It's not just a front page logo or a corporate typeface, but the smaller details which are consistently reproduced on every publication. Things like the style and positions of page numbers (also known as folios), headlines or sub-headings, smaller logos, even the traditional usage of illustrations and photography, are often strictly defined in the publication's official design. Not only do these guidelines make the product consistent and easily identifiable, but with the right set-up can significantly ease the layout process. So how can doing it on your computer help?

The first thing to do before launching into any project of this kind is to work out how and where you're going to output it. Once you know that, you can work out what resolution to work in, whether full or specific colours are relevant, and most importantly, what physical size the document will be. Remember to make sure your document will fit any other physical requirements: a card will have to fit in an envelope, a record sleeve accommodate a 7in or 12in disc, an inlay snuggle into a cassette or CD case. Paranoia can creep in when you wonder whether your post-distributed publication will actually fit through the desired letterboxes.

## Putting on the style

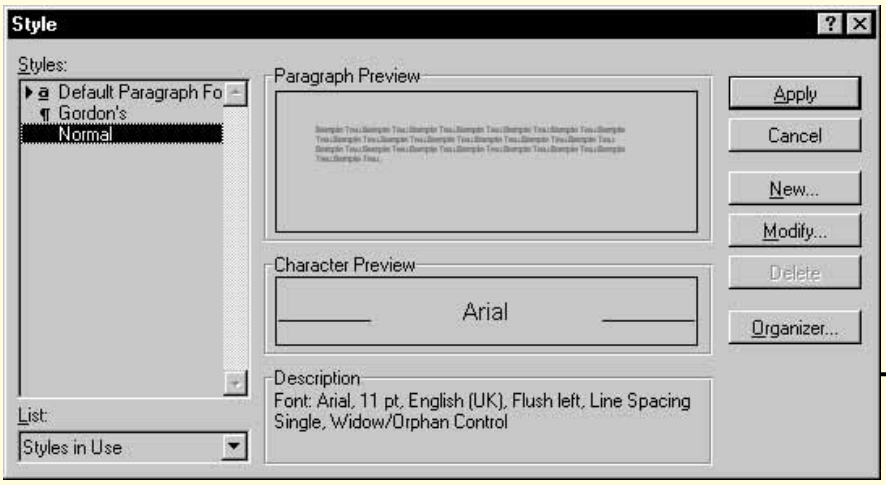
Once you've worked out the size, resolution, type of printing and media to use, you're ready to set a style. The simplest use of style is the letterhead, a logo which identifies you when consistently reproduced on your letters, fax cover sheets, business cards and compliment slips. Most sit the logo at the top and pop the contact details at the bottom.

Once designed, you could save it as a document and insert your desired text or graphics each time you use it, and therefore print to order. The advantage here is that you can see on-screen what the entire page looks like, and ensure nothing obscures anything else. The disadvantage is that the same printer will be used for everything, which may not suit your desire for, say, a vibrant red logo.

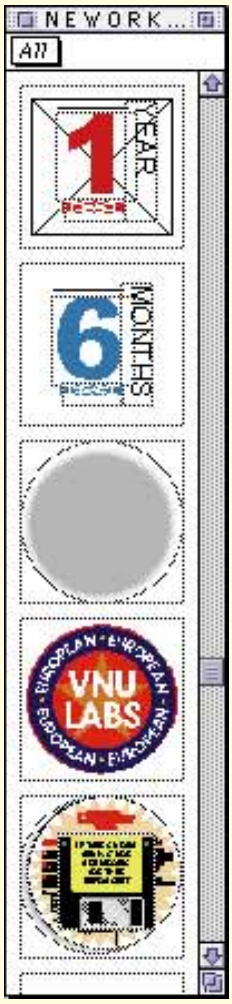
## The common touch

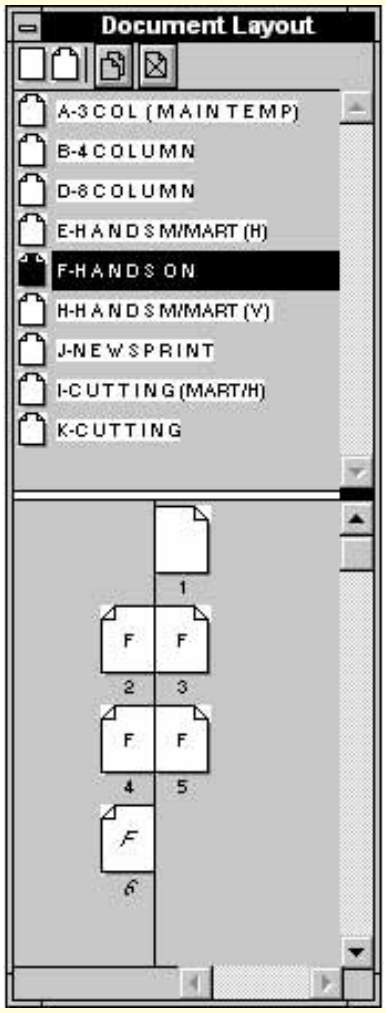
The more common implementation is to have your basic stationery with the standard elements, logo and contacts printed in large quantities. This can be re-fed into your printer each time you want to add a message. The advantage of this route is that you can use two different printers — for instance a good colour one for the letterhead, then a mono laser for the text. There's also the opportunity to have a professional printer knock out a large quantity of good-looking coloured stationery ready for your high-quality lasered text, relieving you of the need for a colour printer.

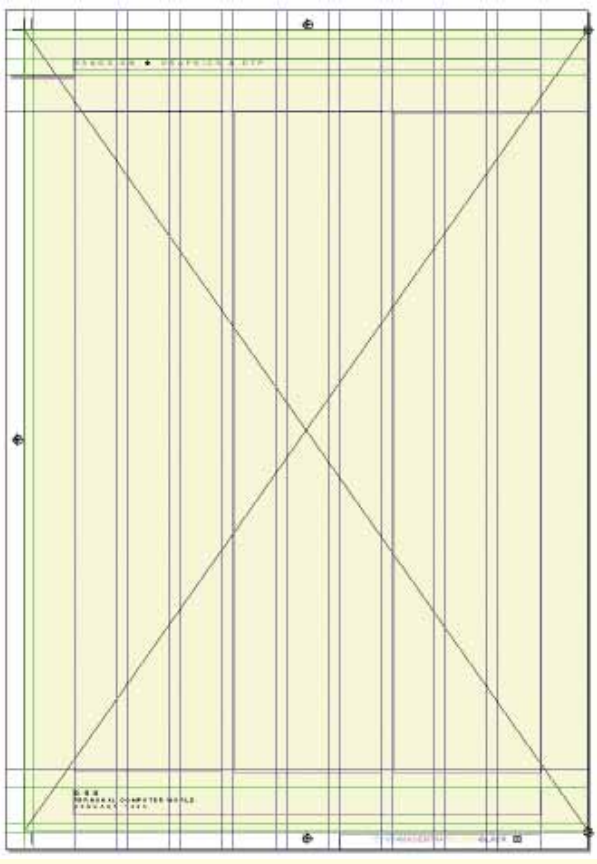
The big disadvantage is that it's extremely easy to print over your precious logo, thus ruining the whole effect. To prevent this, you need to set up your applications to print *only* on the free area. Defining margins in a word processor is one step

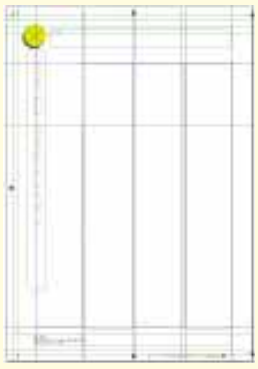



*A fascinating insight into the way I work at PCW: it's my very own redefined Normal style sheet in Word for Windows*



**Above left** *PCW's very own style sheet, viewed in Quark XPress*
**Above middle** *PCW's very own Quark XPress library, full of handy logos and the like*
**Above** *Quark XPress's Document Layout Palette complete with, er, PCW's very own master pages*
**Left** *our master page for the Hands On section, and* **(below)** *our master page for the Cutting Edge section*

**Font of the Month**


away from designing master pages in desktop publishing, which I'll do next. A final piece of advice on making stationery: make sure you can feed it through your printer. Check out any surface finish and weight, in case you end up invalidating your guarantee with the printer.

A master page is simply a template which contains regularly used elements. The letterhead on the top of company stationery is the most basic form of master page. Master pages really come into their own in a situation where each page always contains several consistent elements, such as chapter and author details in a book. Page numbers are also classic master page elements, always printed in the same place and type style. Some applications can number the pages automatically, although in magazine production, where pages tend to get swapped around at the eleventh hour, page numbering is normally entered by hand.

### Regular features

Unless you are designing a very rigid page, it is not really practical to place spaces for photographs or illustrations on a master page, since they would always appear in the same place. Normally the master page would include "guides", which mark out the designer's grid, indicating where such elements should be sized and located in order to stay in style. *PCW*'s Hands On master pages, for example, always include certain elements each month, such as the Hands On "strap" (the sub-heading in the top corners) and the pale yellow background.

When creating or adding new pages, you should be able to choose a master template as your starting point to speed up the process and add consistency. Many higher-end DTP applications allow you to define several master pages to choose from for each project. Publications which are physically bound together would normally have at least two, catering for left and right pages.

A quick word of warning: most templates look exactly like a normal page with some elements already placed. Make sure you work on pages created by the masters, rather than making the mistake of adding elements to the master itself. Remember, anything you place on the master pages will be reproduced on *every* new page that master creates.

### Referring to the text

The next thing you need to decide is the text style or font you want to use. If you always set your letters in 12-point Times, it may not seem justifiable to define style sheets. *PCW*'s main body copy throughout the magazine is Arial, set in 8.25 point on 11-point leading. In Hands On it's justified, whereas in the rest of the magazine it is ranged left.

We lay out *PCW* in Quark XPress, which allows you to fill text boxes directly from Word, which could include any kind of formatting — and that's just the main body copy. Captions, headlines, standfirsts and the rest all have different formatting styles, which to key in by hand would be both tedious and potentially innaccurate.

Our Art Editor defined our house styles in Quark XPress, saved them and made them available to all from XPress's Style Sheets palette. Simply select the block of text you wish to put in style and click on the desired style sheet. In a single step, any number of different formatting options are set without chance of error.

Style sheets exist in many applications. Almost every word processor allows styles to be set, along with templates. Microsoft Word's normal.dot template contains information about the paper size and margins, along with the default style used to format text. At work I have redefined my normal style in Word to 11-point Arial on A4 paper, which optimises the display and ensures our workgroup printer doesn't start demanding letter-sized food.

So now you've got your style sheets, templates and master pages doing most of your work for you, what else can be done to free up valuable artistic time? The answer for now is to use libraries of frequently used elements. These can be certain logos or pictures which, although used often, do not turn up regularly enough to justify putting them on the master pages.

### Look in the library

Enter the libraries, which in most guises consist of some kind of pasteboard area into which popular elements can be dragged after creation, then dragged back out again to order. In Quark XPress the library is opened from the file menu but appears on-screen as a palette. Simply drag any subsequently required elements in, and drag out as many copies as you'd like.

A library is a great place to store all those logos — ours contains, among other things, all the *PCW* award logos — but it can be used almost as a graphical style sheet. We have a house style for screenshots — a certain size, with a specific runaround and background. Rather than type this in every time, a Quark XPress picture box with typical attributes has been dragged into our library, and even if resizing is required, is a handy starting point.

Computers are great at tedious, repetitive processes like those mentioned above. So next time you're working with DTP, drawing, or even just word processing applications, leave the monotonous tasks to your PC and get on with the far more interesting and human job of design. By setting up libraries, styles and templates you'll save time and improve your overall look with consistency.

### Font of the Month

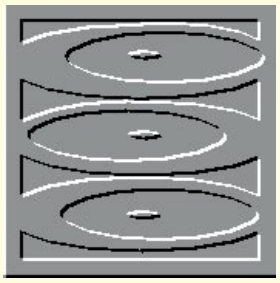
Font of the Month for March is an old favourite of mine, Perpetua. Designed by Eric Gill between 1928 and 1935, this is a classic typeface. Not as stuffy or overused as Times and Garamond, Perpetua is nevertheless ideal for body text.

Eric Gill also designed Gill Sans, another classic and veteran Font of the Month. Contact the suppliers below if you're interested in buying a copy.

**PCW Contacts**

Anyone got any other great time-saving tricks or shortcuts? Write to me at the *PCW* address on Broadwick Street or email me as **gordon_laing@pcw.ccmail.compuserve.com**

**Faces** 01276 38888
**FontWorks** 0171 490 5390



# It's out on **video**

**Video hogs the limelight this month, with Panicos Georghiades and Gabriel Jacobs attending to such matters as playing video disks, grabbing video sequences, and the elusive Crunch-It card.**

Most of the letters we receive these days are about video, whether capture or playback. So if you're considering buying a video board, stick around with us.

But we begin with some announcements that will interest multimedia developers. A new version of Aimtech's IconAuthor (version 7.0 for Windows 95) is now available. This concentrates on providing enhanced multimedia authoring for the Internet, with interactive features that go beyond what current standard HTML can provide. IconAuthor includes features such as easily attainable drag-and-drop capabilities, timers and combo boxes.

In addition, a new facility called Universal Media Access allows IconAuthor applications to access data located on a hard disk, CD-ROM, remote database, or any server on the Internet. We'll have more on this in the near future.

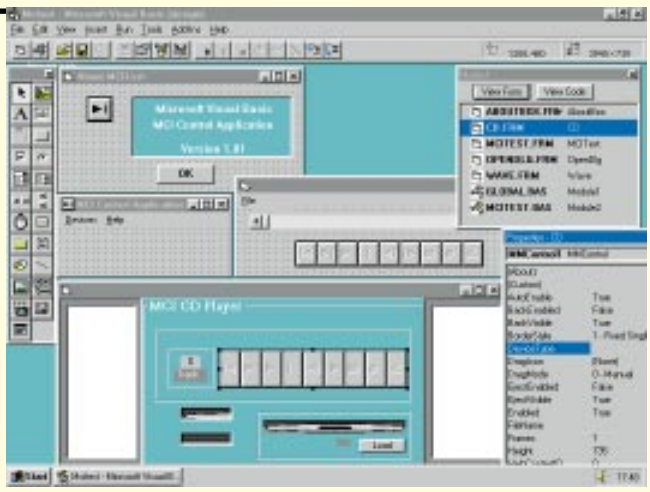
Two other new versions of authoring tools are also now available: Illuminatus 3.0 and Visual Basic 4.0. Illuminatus does not require programming and is one of the easiest and cheapest multimedia authoring programs around. The new version comes on CD-ROM and includes more templates and clip media.

Visual Basic isn't officially classified as a multimedia authoring tool but it's still the preferred choice of many multimedia programmers due to its universal use and, frankly, much better language syntax. Although nothing has been advertised about version 4.0's multimedia enhancements, they're there, especially in the 32-bit Professional version. Also, enhancements related to database access now make VB4 an even more attractive tool for multimedia applications that involve database-stored data.

Finally, if you're into writing one-off CDs, you'll be interested to know that Corel CD Creator (version 2) is now out. Apart from benefits related to Windows 95 GUI features and speed, the new version can write Video CD and Enhanced CD formats.

### All present and correct?

"*I own a 486 33MHz system. I recently purchased a sound card and a Sony CDU31A 2X CD-ROM drive. I am also*



**Right** *Visual Basic is established as a multimedia authoring tool. Version 4.0 has several enhancements designed for multimedia, not least improved database access*


**Left** *The Reveal VE500 is probably the cheapest board on the market offering M-JPEG compression. It comes with Ulead's Media Studio 2 and costs as little as £322*

*about to purchase a video card. I was wondering if it was possible to play video disks using my present hardware (excluding the video card) and software in Windows For Workgroups (i.e. Media Player). If not, could you recommend a low-cost method of playing video disks with my present CD-ROM drive?"*
**Timothy Thairu (Henry_Thairu@AfricaOnline.co.ke)**

By "video disks" we assume you mean Video CDs, not the old analogue laserdiscs which were also known as "videodiscs".

There are two ways to play MPEG-1 video, the format contained in video CDs. The cheapest way is to use a public domain or shareware software-only playback program, such as MPEGPLAY, which is often incorporated into Internet browsers. These will provide you with a small window playback on your 486/33, but you'll really only be able to get an idea of what the movie is about. With a Pentium 90 or above, you can get a decent-size playback window and frame rate. Programs are provided free with some graphics cards, but note that some of these software-only MPEG players are for vision only: sound does not come included in the package.

To get proper MPEG-1 playback at full screen and frame rate (and especially on your 486/33MHz), you'll need to buy a dedicated MPEG playback board. There are several on the market, such as the Creative Labs RT400, ReelMagic, Visionetics and Ace MovieMaster; these work in conjunction with graphics cards. There are add-on boards for cards such as the VideoLogic 928 movie (which accelerates .AVI files). There are also single cards that combine MPEG playback and S-VGA graphics on the same board (for example, the Spea Showtime Plus), saving you both money and space.

Your twin-speed CD-ROM isn't a problem, since Video CD has a single-speed transfer rate. Problems do arise with some systems where the CD-ROM drive can't keep a constant sustained transfer rate required by MPEG-1, even if this is single speed. Fortunately, Sony CD-ROM drives have a good reputation when it comes to playing Video CDs. Sometimes the cause of bad MPEG-1 playback is the CD-ROM driver.

## How does that grab you!

*"I wish to grab short video sequences (10 to 15 seconds) and import them into Multimedia ToolBook to create interactive teaching material for medical students. One idea would be to make our own CD-ROMs with a runtime program, so that the students can run them on their own machines or ones around the college. I have a Dell P90 running Win 3.11 for Workgroups, with a 500Mb hard drive, 8Mb RAM, a Number Nine GXE64 graphics card, and a quad-speed CD-ROM drive.*

*Could you suggest a frame-grabbing board and/or direct me where to find information?"*
**Peter Rowles (rehkpmr@ucl.ac.uk)**

We don't want to recommend a single board as there are several that will do the job. You don't specify what sort of quality you have in mind, or what budget you have available, both of which are, of course, important considerations. But we can give you a general answer which will cover the same kind of questions asked by a number of readers this month.

Judging from the information you give about students being able to play them on their own machines and on machines around your college, you're looking at producing video clips that are playable using software-only decompression on machines ranging from, say, a 486/33MHz to a Pentium 90MHz, with average graphic cards with no special video acceleration facilities.

In that case you're looking at video window sizes ranging between 192 x 144 to 320 x 240 pixels, and (realistically) at frame rates of between five and 25 fps. You have to decide the actual figures depending on the amount of movement and the detail in each video segment. Less movement requires fewer frames per second, allowing larger window sizes thus giving more detail.

Your 500Mb hard disk will be sufficient to handle capturing and editing 10 to 15 second clips, but not (of course) to store them. What's important with grabbing video is the minimum sustained transfer rate of the hard disk, *not* its actual size, but larger disk sizes usually have better transfer rates. We recommend a minimum of 1.5Mb per second, and the higher the better.

There are companies that manufacture hard disks specifically for audiovisual applications. They're often called AV drives. These drives (which usually have larger buffers) ensure constant and high transfer rates so that you can record and playback a continuous stream of data. Micropolis,

## When it comes to the Crunch

*"I read your review in* PCW *about the Crunch-It card, and contacted the manufacturer for details. Nothing came, and I've since lost the contact details.*

*I'm interested in buying a new video capture board to replace our Screen Machine II. I thought MPEG was out of the question, till I read your review. I think we're looking at under £1,000 for a general purpose board, mostly Video for Windows, but possibly MPEG.*

*We are an institutional computer-aided learning unit. Can you send me the name of Crunch-It's manufacturers, and any advice on other boards we might consider?"*

**Steve Brydges (CCZSWB@ccn2.ccc.nottingham.ac.uk)**

Spea has now been acquired by Diamond Multimedia. The telephone number is still 01844 261886. For other boards, see our answer to Peter Rowles's query [page 295]. Any of the boards capturing M-JPEG can be used to produce .AVI files. Using software compression, you can then recompress the M-JPEG files to MPEG files. However, there are now some relatively inexpensive boards that can capture MPEG files directly in realtime, such as Vitec's Video NT (£350).

Incidentally, since you're a university-based CAL unit, you may already be a member of ALT (the Association for Learning Technology). If not, consider joining (01865 273281 or alt@ox.vax.ac.uk for full details). ALT has hundreds of members involved in producing multimedia software specifically for higher education. It's a way of being in constant contact with people encountering the same problems and finding common solutions.

*"Could you tell me the minimum system requirements for the Spea Crunch-It?"*

**Mathew Southall (lpyimjs@psyc.nott.ac.uk)**

The basic requirements for the Spea Crunch-It card are more or less the same as those for most other video capture cards, since they all aim to perform to roughly the same level. These requirements are: 486 PC or higher, 16-bit ISA expansion slot, MSDOS 5.0 or higher, 8Mb or more of RAM, hard disk transfer rate of 500Kb/sec minimum (the higher the better), 100Mb E-IDE or SCSI hard disk (recommended more than 1Gb audio-visual drive). You also require a video source that outputs composite or S-video signals.

As for the Crunch-It card specifically, it requires an external TV monitor with composite or S-video input for monitoring playback. And if you wish to view the signal on your computer monitor, you require the Spea Showtime Plus card (at £325). As with most other video capture cards, you normally also require a sound card for recording sound.

Quantum, Seagate, Conner and others produce such drives, and prices have recently dropped dramatically — how does £400 for a 4Gb drive sound to you?

As for video capture cards, these range from £200 upwards. If you go for cards that capture and compress using Indeo 3.2 (such as the Inter Smart Video Recorder, the Creative Labs RT300, or the FAST Aviator) you'll be able to capture in realtime and use the movies straight away on other machines in their original captured format (Indeo 3.2 is available as a software-only decompression driver).

Better quality than Indeo 3.2 is M-JPEG compression. Cards that compress using this format include the Miro DC1 and the new DC20, the Spea Crunch-It, the Fast FP/S 60, the Reveal VE500 and the Orchid Vidiola Premium among others.

However, if you capture using this format you'll need to recompress the video clips using drivers supplied free with Video for Windows for playback using software-only decompression on other machines.

Suitable drivers giving reasonable quality are Cinepack, MS Video 1, and Indeo drivers, including the latest Indeo Video Interactive that gives superior quality (near MPEG) video.

### Which video capture card?

"*Which is the most suitable video capture card for a PC? I have a Pentium 75MHz with 24Mb RAM running Windows 95/Windows NT. I wish to capture from VHS video and laserdisc (video has Scart and phono connection, laserdisc has Scart and S-Video connections) at the fastest rate/size. Replay of the captured video would probably only be on my machine, but possibly on other machines too. I'd prefer to keep my existing video card (a Diamond Stealth). I have a SoundBlaster for capturing audio.*

*I've been looking at the Miro DC1 and the VideoBlaster 300. Are there any problems having one over the other? The few suppliers I've spoken to seem useless with advice, so I hope you can give me some help."*

**David Doyle (dd215@gre.ac.uk)**

The other letters in this column, and our answers, will interest you. The two products you mention are not in the same category for either price or quality. The VideoBlaster RT300 is half the price of the Miro DC1. It uses an Indeo 3.2 codec, while the DC1 uses an M-JPEG codec. Files captured with the RT300 can be played without the card (using software-only decompression), while files recorded on the DC1 need the DC1 for playback, unless you recompress them using a software-only driver (including Indeo 3.2; this is not difficult to do, it just takes time).

Both cards accept S-Video or composite signals. The RT300 has no video output, so you can't record .AVI files back onto a VCR, if you need to. The DC1 has a Video Out facility — both S-Video and composite (phono) — but doesn't have a built-in overlay facility. This means you can't view the captured files on your computer screen, unless you buy Miro's overlay option or recompress the files using another (software-only playback) driver. It is, however, possible to view the captured video on a TV via the video output.

In our view, go for the RT300 if you wish to grab video at a high compression ratio into a file that will be the final product. The DC1 is a better choice if you wish to grab video at low compression ratios for editing first, and then either recompress them to a smaller file, for software only playback on other machines, or output them back to a VCR. If you decide to go for a Miro board and you have a PCI bus, consider the new DC20 instead of the DC1.

### PCW Contacts

If you have any multimedia-related problems or queries, email us at **g.c.jacobs@swansea.ac.uk**. We're sorry, but we can't answer queries by personal reply — we'd be at it all day! But we're glad to publish queries, with our answers, which we think will interest *PCW* readers generally.

**AimTech** 0171 702 1575
**Illuminatus** from Digital WorkShop 01295 258335
**Spea** (now Diamond Multimedia) 01844 261886
**Miro** 01494 510250
**Reveal** VE500 (Video Artist) 0181 845 7400
**Creative Labs** 01734 344322

# Chord accord

**Confused about chords? Not any more, as Steven Helstrip explains all you need to know about how they're put together, how they interact and how to use them to best effect.**

Judging by the letters I receive, the most frequently asked questions are about the use of chords and how to treat them. So this month we'll be looking at chord progressions, how chords relate to one another and how chord inversions can be used to create different textures.

In theory, it is possible to play any song using just three chords: the root chord, the IV and the V. In the key of C Major these translate to C Major, F Major and G Major.

Some of the best songs ever written are based on these three chords and the reason they work is because each note in a major scale is covered within these chords. But many variations can be used: chords can be substituted, or replaced, with related triads; even changing the bass note can give a chord a different texture.

### What's in a chord?

A chord, or triad, is simply a collection of three or more notes that sound together. The two most common chord types are Major and Minor triads consisting of just three notes.

**Fig 1 Seven chords in the key of C major**

| I | II | III | IV | V | VI | VII |
|---|---|---|---|---|---|---|
| C Maj | D Min | E Min | F Maj | G Maj | A Min | B dim |
| C E G | D F A | E G B | F A C | G B D | A C E | B D F |

There are several ways you can find the notes to a chord: you can refer to our Chord Reference table [*below*] — probably the easiest way; or you can calculate them for yourself by first playing the root note (C, for example), followed by the third and the fifth notes in that scale (E and G); this chord is C Major. If you want a minor chord, then the third (E) needs to be flattened, in this case, E flat.

In every scale there are seven notes and therefore seven basic chords. For this example we will stic with the key of C Major, although the same principle applies to every scale. *Fig 1* shows the seven chords that belong to the key of C Major.

In every major scale there are three major chords: the root, the fourth and the fifth chords. Three of the remaining four chords are minor (second, third and sixth) and the seventh, a rarely used chord, is diminished.

The key of C Major has no accidentals (sharps, flats, black keys; whatever you want to call them) and thus each chord has the same shape when played on a keyboard.

You will notice, too, that many of the chords share notes. For example, A Minor has two notes which can also be found in C Major; those notes being C and E. A Minor is therefore the relative minor of C Major. The relative minor of G Major is E Minor and so on.

Because many chords share the same notes, it is possible to substitute a major chord for a minor chord to add more interest (*Fig 2*). Let's say, for example, the chords for a particular song are C Major for two bars, followed by F Major for two bars.

This can be improved by moving to A Minor on the second bar and instead of going to F Major, move down to D Minor for a bar and then to F. The chord sequence now has four chords and in some cases will sound more interesting and, dare I say it, more accomplished.

**Chord Reference Table**

| | Major | Min | Seventh | Maj Seventh |
|---|---|---|---|---|
| **C** | C E G | CEflatG | C E G Bflat | C E G B |
| **C Sharp** | Csharp E Gsharp | Csharp Eflat Gsharp | Csharp E Gsharp B | Csharp E Gsharp c |
| **D** | D Fsharp A | D F A | D Fsharp A C | D Fsharp A Csharp |
| **D Sharp** | Dsharp G Asharp | Dsharp Fsharp Asharp | Dsharp G Asharp Csharp | Dsharp G Asharp D |
| **E** | E Gsharp B | E G B | E Gsharp B D | E Gsharp B Dsharp |
| **F** | F A C | F Aflat C | F A C Eflat | F A C E |
| **F Sharp** | Fsharp Asharp Csharp | Fsharp A Csharp | Fsharp Asharp Csharp E | Fsharp Asharp Csharp F |
| **G** | G B D | G Bflat D | G B D F | G B D Fsharp |
| **G Sharp** | Gsharp C Dsharp | Gsharp B Dsharp | Gsharp C Dsharp Fsharp | Gsharp C Dsharp G |
| **A** | A Csharp E | A C E | A Csharp E G | A Csharp E Gsharp |
| **A Sharp** | Asharp D F | Asharp Csharp F | Asharp D F Gsharp | Asharp D F A |
| **B** | B Dsharp Fsharp | B D Fsharp | B Dsharp Fsharp A | B Dsharp Fsharp Asharp |

### Seventh heaven

So what else can you do to "spice up" the chords? We've mentioned major and minor chords, let's move on to sevenths.

You will have noticed that numbers always come into the equation when talking about chords. And although they can sound intimidating, they really aren't all

## Chord progressions and how to tune them up

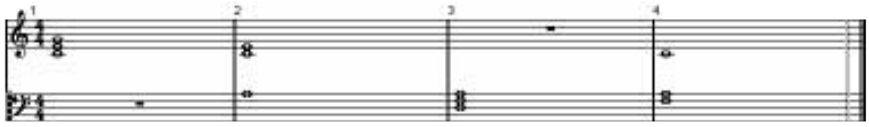


**Fig 2** *Spice up your tune by substituing a major chord for a minor one*

**Fig 3** *Make more of your melody by adding sevenths to the A and D minor chords*

**Fig 4** *You can add sevenths to chords C and F too, but this is where things get tricky*

**Fig 5** *Inverting the chords so that each chord is not playing in parallel*

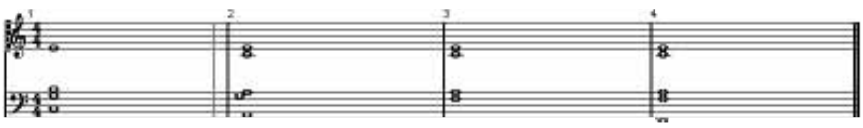


**Fig 6** *For a creative crescendo, try adding a ninth to D minor*

that bad: a seventh chord simply has one extra note — the seventh. Seven notes up from A is G. Therefore, by adding G to an A Minor chord you have A Minor Seven.

To further add to the confusion, you'll notice that A Minor seven is effectively a C Major chord but with an A in the bass. Likewise, D Minor seven is effectively an F Major chord, only with a D in the bass.

Continuing with the new chord progression, try adding sevenths to the A and D Minor chords (*Fig 3*). Again this adds further interest, thickens up the chords and provides more options for the melody and

other musical parts that may come into the song.

Sevenths can also be added to chords C and F, but this is where it starts to get really confusing (*Fig 4*). If you were to play C seven, the notes in that chord are C, E, G and B flat. Likewise with F seven, the notes are F, A, C and E flat. The confusing part is that there are two types of seventh chords: sevenths and major sevenths. A Major seventh is where the seventh note is raised by one semitone. So, the chords in which we're interested are C Major with a Major seventh, if you see what I mean, and F Major with a major seventh.

### Inversions

Each chord now has four notes and each has an identical shape when played on a keyboard. When each chord is played in root position (with the root note at the bottom) the chord progression can sound disjointed. By inverting the chords, or changing the shapes, the progression becomes more complete.

An inversion involves moving notes up an octave. For example, C Major played in first inversion would have an E followed by G, then C. The same chord played in second inversion would have G followed by C, then E. With seventh chords you can have up to three inversions, where the seventh note is played at the bottom of the chord.

Going back to the chord progression, try inverting the chords so that each chord is not playing in parallel. *Fig 5* shows just one example, although you can try different inversions.

Depending on which instrument is playing the part, you can also add a bass note. I put these examples together using a electric piano. When doubled up with a string pad it may sound better without the strings playing the bass note since the texture will become too thick.

*"Some of the best songs ever written are based on these three chords [C Major, F Major, G Major]. They work because each note in a major scale is covered within these chords"*

### Cloud nine

Going completely overboard, you might like to add a ninth to D minor (*Fig 6*). This involves adding an E to the chord. When reading printed music, if you see that a chord has a ninth, it is usually taken for granted that the seventh is included, even though it might not specify it.

When playing straight chords on a piano, try different inversions but try to keep away from playing in parallel. If there is a bass playing, it may sound better not to play a bass note, particularly when playing jazz.

When it comes to arranging strings it's sometimes necessary to "thin out" the chords as the texture can become too thick. Try removing the root note and perhaps the fifth. The third is best left in the chord since it's the third which determines a major from a minor chord.

You can find more examples of chords on this month's free cover-mounted CD-ROM, recorded as MIDI files. The file is chord.mid and can be found in hands\sound.

### PCW Contacts

Readers' contributions to the Sound column are music to our ears. If you have any hints or tips, any MIDI-related items or general comments, send them to the usual *PCW* address, or to **steven_helstrip@pcw.ccmail.compuserve.com**

# Crystal clear?

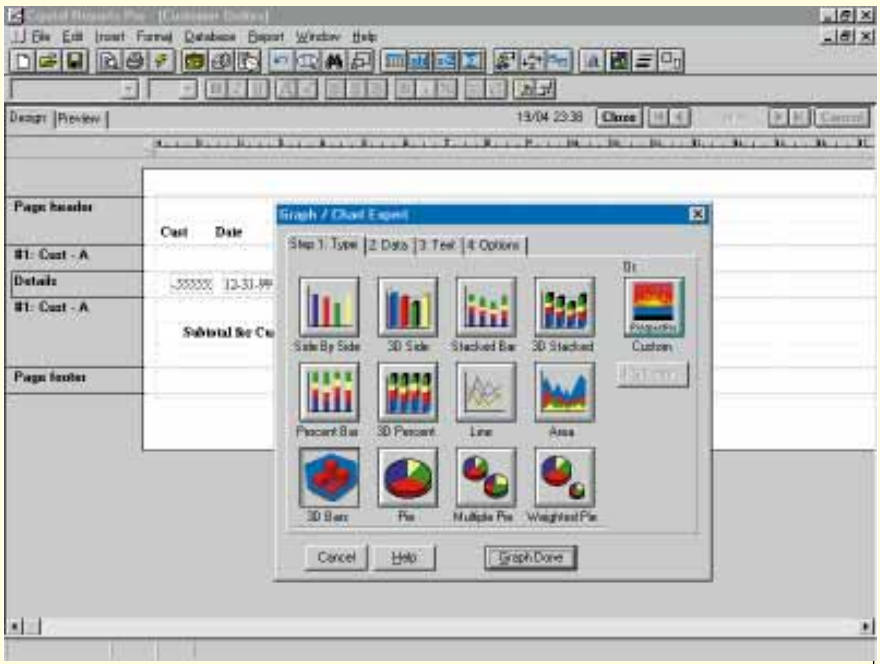
**Tim Anderson** explores the strange world of Crystal Reports and compares the relative merits of Visual Basic 4.0 and Delphi.

Shrouded in corporate mystery is the question of why Microsoft has report writers in both Access and FoxPro but supplies third-party Crystal Reports with Visual Basic. And, why Borland paid good money for ReportSmith, but supplies Crystal with Visual dBase. Somehow Seagate's Crystal Reports has become the most widely used report writer, although not necessarily the most liked. A problem in both Delphi and VB is that the report module is not completely integrated with the main programming environment. For example, Crystal Reports has a formula language which lets you include calculations or text which vary according to values in the current record:

```
if {CUSTOMER.BALANCE} > {CUSTOMER.CRED_LIMIT} then
"NOTE — credit limit exceeded!!!"
```

Fair enough; formulas are very useful but if you use Visual Basic, you will find that Crystal's formula language is different from VB's. Where VB has VAL, Crystal has ToNumber; Crystal has UpperCase where VB has UCase. There are numerous other examples. All this means more work and, inevitably, more errors. It would be a great improvement if you could call VB functions, including user-defined functions, from Crystal.

Another gripe is that Crystal Reports gives you very little control over its print window, which is important since this is what the user will generally see. The print window contains buttons by default for paging through or printing the report. There are no tooltips on these buttons although it is far from obvious that a suitcase icon means Export. You might want to remove some of these buttons, or design your own toolbar, but you can't. Given the sophistication of VB 4.0's database features in other areas, it is disappointing. The Visual dBase version of Crystal is better, since it uses the dBase expression builder.




*If you have the full version of Crystal Reports, you can use a variety of graph types in your report*

One option is to upgrade to the full Crystal Reports product and I have been looking at version 4.5, the first version for 32-bit Windows. It comes on a CD with two, smart, printed manuals, although they are incomplete and frequently refer you to online help. I tested the release version, although many of the 32-bit database drivers from third parties were not yet available. All the options are covered with VBX, 16-bit and 32-bit OCX, MFC and Delphi VCL wrappers. Those upgrading from the Visual Basic version will find a much improved user interface, with tabbed dialogues and a number of "Experts" to simplify report design.

The Professional edition supplies additional database drivers for SQL servers, while the Standard version is intended only for desktop databases like Access, FoxPro and dBase. You can also compile reports to an executable format for distribution. This brings no speed advantage, since it uses the same runtime engine but is useful for giving to those who do not have the full version. There is no gain for developers who will prefer to write their own applications which call Crystal Reports. Another advantage of the Professional version is that reports can be bound to data controls to provide an instant, automatic, reporting facility.

At the heart of Crystal Reports is the CRPE.DLL (or CRPE32.DLL) print

engine. It is noticeable that the OCX and VBX controls are small, because their only function is as wrappers for the print engine itself. This makes it much easier for Crystal to support different programming environments. Unfortunately, Crystal does not expose all the functions of the print engine in the custom controls, so you may find you want to call the DLL functions directly. If you do, you may not use the custom control at all, thus forcing an unpleasant decision on the developer.

Crystal has packed a lot into this product. Things like the visual linking expert, drill-down behind summary reports, the ability to base reports on stored procedures, "top n" reports, integrated graphing and the extensive formula expression language make this a comprehensive reporting package. It is large, too; the 32-bit print engine DLL is 1,788K and just a little awkward and untidy for developers.

Finally, the full product is not an essential upgrade for VB or Visual dBase programmers, and you should make sure you need the extra features before taking the plunge.

### Delphi or Visual Basic 4.0?

I have received the following email from Bob Osola: *"I'm in a quandary about which way to go; I use Paradox for Windows (OPAL) for my data apps, and VB 3.0 Pro for general stuff. The big question is; Do I dump these two and go*

## Making sense of groups in Crystal Reports

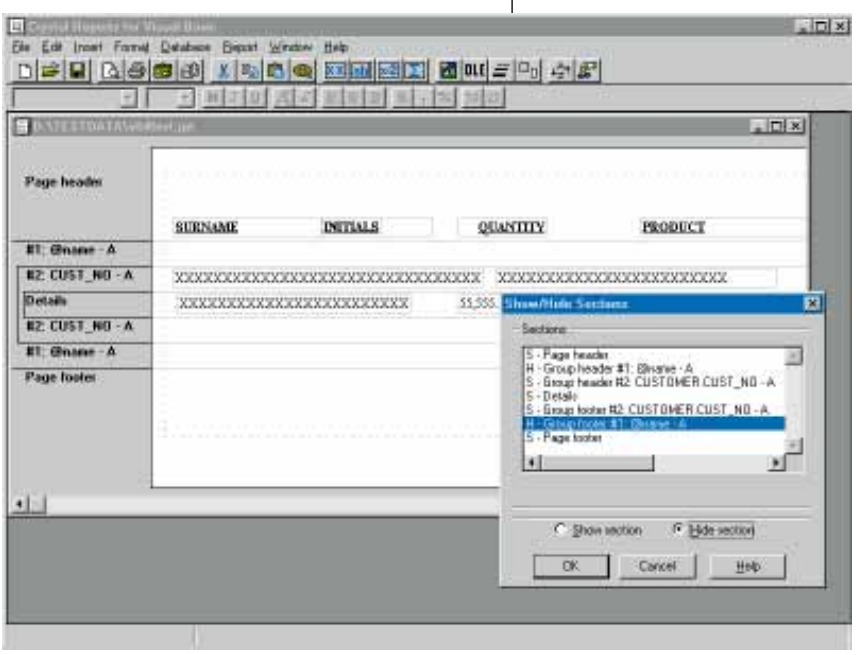
To use groups in Crystal Reports, choose Group Section from the Insert menu and select a field from the active database. Crystal inserts a header and footer area for the group and when the report is run, a new group section will begin whenever that field changes.

Unfortunately, this procedure does not always achieve the desired result. Imagine, for instance, a database in which there is a customer table and an orders table joined by an ID field called CUST_NO. You want the orders to be grouped by customer and to appear in alphabetical order of surname. If you group on the SURNAME field, all customers with the same surname will be lumped together in one section. But if you group on CUST_NO, the report will appear in CUST_NO order, which is not what you wanted.

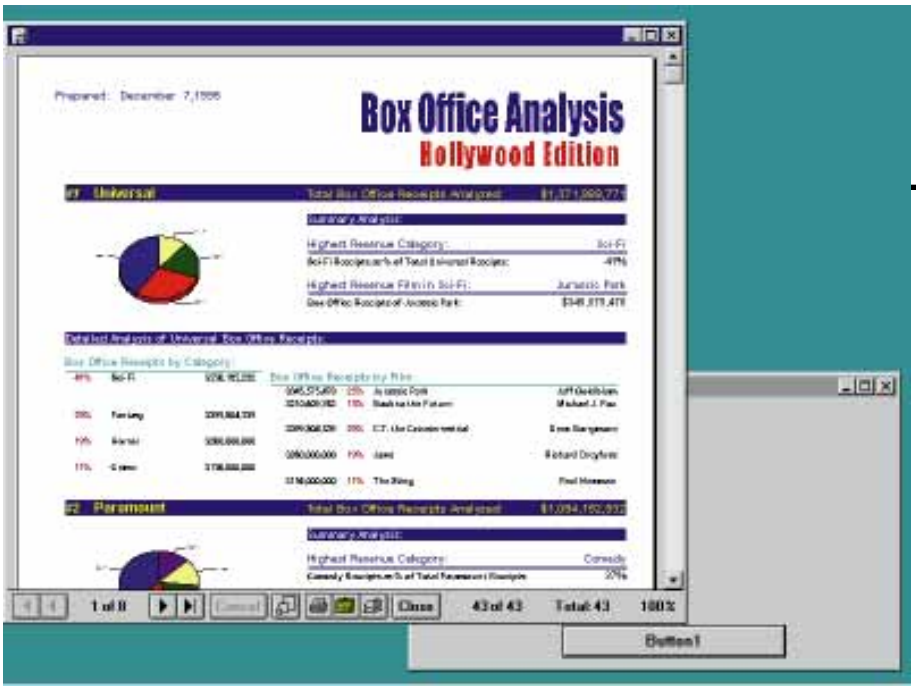
The solution is to create a dummy sub-group. First, insert a group section based on SURNAME. Then insert a further section based on CUST_NO. Finally, choose Show/Hide sections from the Edit menu and hide the group header and footer for the SURNAME group. Now the report will appear correctly, ordered by surname but grouped by CUST_NO.

A powerful feature of Crystal is the Group Selection Formula. This lets you filter a report according to the summary values in a group. For example, you might want to see all the invoices above a certain value, where the value of an invoice is only known once all the orders for that invoice have been totalled. You can do this by grouping by invoice, and using the Sum function in the Group Selection Formula.

*Crystal's Hide Sections feature lets you sort a report by one field, while grouping data on another*



## Using Crystal Reports with Delphi




*Using the Crystal VCL component, it is easy to create a Delphi application that displays a report*

The supplied VCL component has not been produced by Crystal, but by a programmer called John Murphy who "needed it for a project I am working on." Documentation is rough and ready, and the author remarks that: "This is an initial build… I will update it as it matures." Better than nothing, but with Delphi's gathering momentum it's a shame that Crystal could not have taken a bit more trouble.

Installing the component is done in Delphi from the Options — Install Components menu. The location of the component must be added to the library search path and then UCRPE.DCU can be added to the component library. Once Delphi has rebuilt the library, the component appears on the Data Access palette.

A simple report application can be created by simply adding the component to a form, setting the ReportName property to an .rpt file and writing code to set the Action property to 1 at runtime.

The finished Delphi application displayed the report noticeably faster than its VB equivalent, presumably because the VCL component carries less overhead than the VBX or OCX versions.

Although Delphi comes with its own report component, the Crystal alternative could prove valuable to developers with an existing stock of .rpt files, or anyone wanting to report on .mdb databases, which are handled well by Crystal.

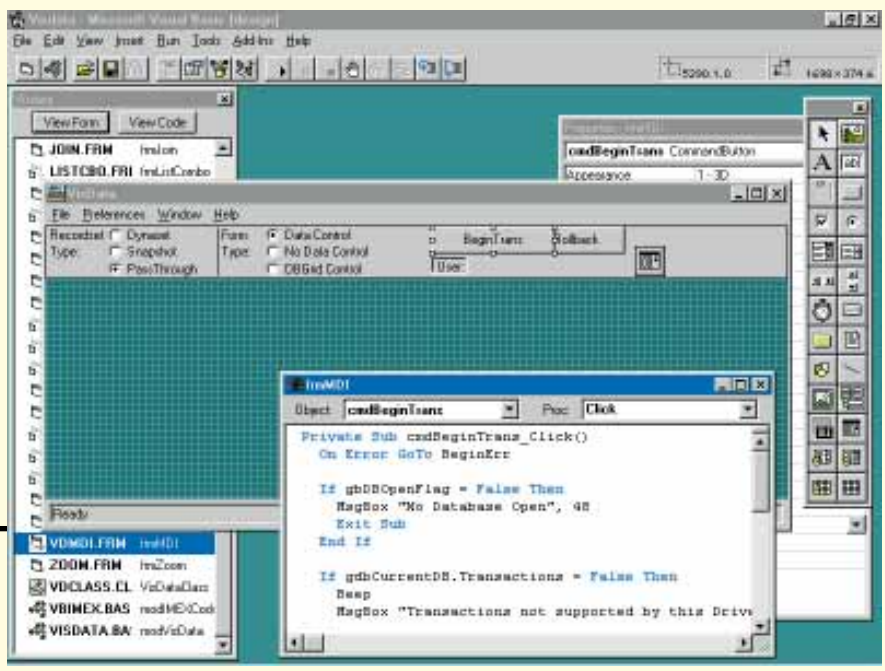
*for Delphi, or upgrade to VB 4.0?*

*"I'm worried that the VB 4.0 OCX route will both bloat my programs and require massive horsepower (and RAM) to run acceptably — this is presently the main disadvantage with OPAL, which otherwise runs rings around VB and Access for database apps.*

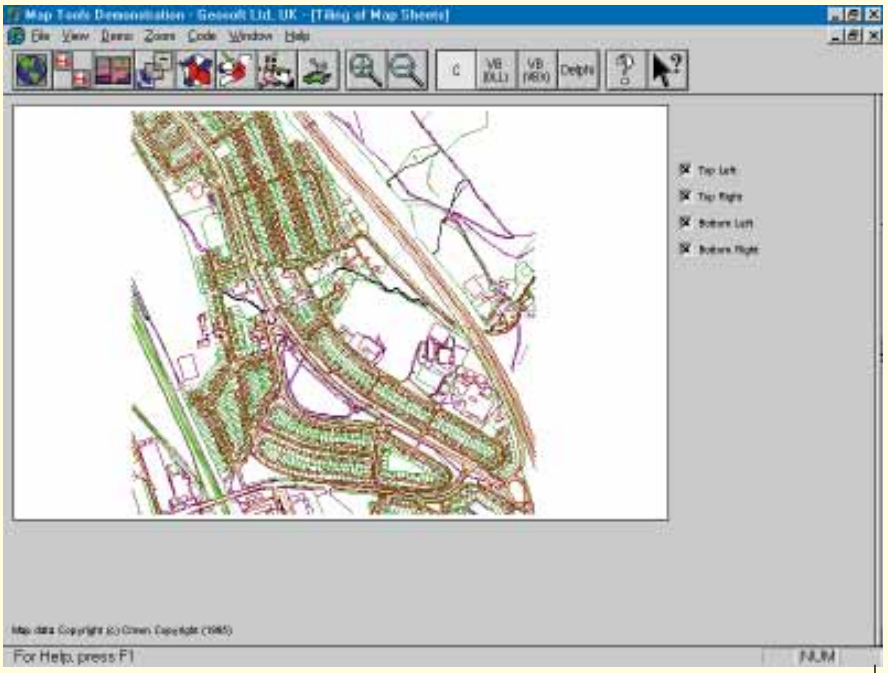
*"Is there any chance of your running a comparison article on Delphi and VB 4.0? I'm sure many others are harbouring doubts about the VB 4.0 OLE-based future (in my experience; generally flaky and slow) but would sooner stick with the massive user base of VB rather than make a leap of faith to Delphi.*

*"Having invested a lot of time in learning OPAL, which now appears to be rapidly going out of fashion, I am biding my time to see how Borland runs with Delphi before jumping in. At least VB will still be around in a couple of years time. Any comment or feedback would be much appreciated."*

Bob's question is right on target. Despite its massive user base, Visual Basic is far from secure. Its core runtime DLLs, plus JET, plus one or two OCX controls, result in applications that are quick to develop but demanding to run. Monolithic database applications like Paradox, Access and FoxPro suffer from the same disease. Historically, the solution has been to upgrade the hardware, treating Pentium machines with 16Mb RAM as the new entry-level standard and



*Too big and bloated? Visual Basic 4.0 with its supplied Visual Data application*




*GeoSoft's Map Tools lets you add mapping features to VB, Delphi or C++ applications*

leaving older PCs to run old software.

No doubt Microsoft is counting on this process to make software like VB 4.0 and Office 95 acceptable. But Delphi has changed the rules. By combining VB's ease of use with a native-code compiler, it provides acceptable performance on modest hardware, like an 8Mb 486, and blazing speed on fast new machines.

Visual Basic is becoming hard to recommend unless you need some particular feature like the JET database engine, or remote data objects. The same applies to Paradox, despite the elegance of its ObjectPal language. Delphi uses the same database engine and gives better performance and flexibility.

Although Delphi is technically excellent, some people hesitate because it's a relatively new product whose language (Pascal) is less well established than Basic, C or C++, and because its future development depends on Borland (the company that delayed dBase for Windows, dropped Sprint, and sold Quattro Pro).

Nobody can predict the future, but Delphi has become Borland's star product and it is hard to imagine the company letting it go. Delphi 2.0 is 32-bit and brings in support for OCX, OLE automation as client and server, and multithreading, to mention just three key features. The compiler is now shared with Borland C++ and the database engine is used across the range, thus reducing the development effort needed. Delphi is as safe a choice as any development language and the pressure is on Microsoft and others to catch up with its technology.

### So what's new?

● Sheridan's VB Assist 4.0 has been released, but its first release is almost as unstable as the same company's first cut of Designer Widgets 2.0. Look out for a review of the patched version soon.

● Microhelp's OLE Tools 5, with 55 OLE controls, and VB Tools 5 is expected shortly, as is Sheridan's ClassAssist which promises to improve Visual Basic's object orientation.

● Graphics specialist Bits Per Second has taken on a new product called Map Tools (illustrated above), developed by Geosoft, which provides mapping functionality via a DLL and VBX control.

● Out too is TopSpeed's Clarion for Windows 32-bit edition. Like Delphi, Clarion features a native code compiler along with integrated database features that make it attractive for some applications.

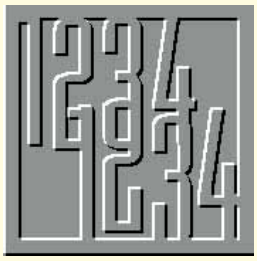
### PCW Contacts

**Tim Anderson** welcomes your Visual Programming comments and tips. He can be contacted via *PCW* at the usual address, or on **freer@cix.compulink.co.uk**

Contemporary Software **01727 811999** is distributor for Crystal,Sheridan and Microhelp

GeoSoft's Map Tools is available from Bits Per Second **01273 727119**

Clarion is from TopSpeed **01582 763200**



# Pounding the beat

## The pound in your pocket has been redefined! Currency conundrums, with **Mike Mudge**.

This investigation has been prompted by George Sassoon of Argyll, who recalled (at 14/10/95) an idea which he had years ago concerning the optimum design of currencies.

Most currencies have notes/coins valued at 1,2,5,10,20,50,.... but in Romania, or somewhere, George found a scale 1,3,10,30,100,... Now clearly, if the values are widely spaced, very few denominations of coins/notes are needed, but a lot of them are required for any given transaction... imagine a United Kingdom currency with only 1p, 10p, £1, £10, etc. in coins or notes. Conversely, if the values are closely spaced, a large number of denominations are needed, but in general, fewer coins/notes are required for a given transaction.

We ask, can an optimum currency be defined; and if so, is it practical?

A research student, Dave Foulser of Columbus, Ohio, observed that practical currencies approximate to geometrical progressions.**

****Definition**. A geometrical progression is a sequence of numbers starting with an initial (arbitrary) value and continuing by repeatedly multiplying this value by a constant number known as the common ratio. David suggests (private communication) that the true optimum currency, according to some as yet undefined criteria, might use a common ratio of

```
e = 1/0! + 1/1! + 1/2! + 1/3!.....
```

approximately 2.7182818 (n!, factorial n, being defined by 0! = 1 and n! = n x (n-1)! where n is a positive integer). However, Dave airily dismisses any practical difficulties arising from buying something costing, say, £9 - 99p using coins/notes valued at 1, 2.7183, 7.3891, 20.0855, 54,5982 pence and £1 - 48,4132, £4 - 03.429 etc. (Of course, the suggested figure of £9 - 99p relies only on the use of the 1p coin for its formation.)

**Problem DF**. Devise and implement an algorithm for expressing any number, N, in decimal in a number base b (general non-integer) to any prescribed degree of accuracy. Negative powers will in general be needed to the right of (i.e. on the least significant side of) the "point" to obtain the desired accuracy.

**Problem GS.** Devise and implement a program simulating societies with different currency systems paying each other randomly generated sums of money. Introduce some measure of the efficiency of a system of currency, which should involve not only the numbers of coins/notes needed for the transactions, but also take heed of the number of different denominations which the mint needs to produce, i.e. the complexity factor of the coinage. Using this measure, comment upon the efficiency of your current system of coinage and suggest ways in which this efficiency may be improved.

**How many "Full Houses"**? Readers may recall that in *PCW* August 1993, Mr. Ram Nair looked at the occurrence of two prime pairs within a single decade, which he referred to as "Full Houses". Now, John Humphries of Lechlade has returned to this problem and, after an analysis of the general permissible form of an I.PQ. (Intra-decadal Prime Quartet), has investigated their occurrence using Excel 5/Visual Basic on a V-Tech 486 SX25 machine. The difficulty John has encountered is that he discovers 37 such structures below 100000 whereas Mr. Nair claims only 35. Paul Rayner (PCW February 1995) has listed far more "Full Houses" than John, but the counting ambiguity remains.

Any investigations of problems DF & GS above, together with the resolution of the "Full Houses" query, may be sent to Mike Mudge, 22 Gors Fach, Pwll-Trap, St. Clears, Carmarthen, Dyfed SA33 4AQ, tel 01994 231121, to arrive by 1st June 1996. All material received will be judged using suitable subjective criteria and a prize in the form of a £25 book token or equivalent overseas voucher will be awarded to the "best" solution arriving by the closing date. Such contributions should contain a brief description of the hardware used, details of coding, run times and a summary of results obtained.

### Feedback from readers

A highly recommended publication: *An Introduction to the Smarandache Function* by Charles Ashbacher, Decisionmark, 200 2nd Avenue SE, Cedar Rapids, IA 52401, USA. ISBN 879585-49-9. 60 pages paperback, $7.95.

*Some Smarandache Numerical Puzzles* by M.R. Popov, Chandler College, Box 2834, Tempe, AZ 85280, USA. Stamped addressed envelope to Mike Mudge.

The Cake-Slicing Problem, *PCW* November 1995. Martin Sewell of Mill Hill, London, has carried out a details investigation resulting in a program in C upto n = 477, excludiung multiples of 6. Readers are urged to attempt to fill this gap in a fascinating problem first seen by the writer in *The Observer Weekend Review*, 1st December 1963, page 39, as Braintwister no. 156 by D. St. Barnard.

Paul Young of Beeston, Nottingham, has studed the solution of $x^3 + y^3 = z^2$ and published his results in *Mathematical Spectrum*, vol. 24, no. 3; he is generalising this work to expressing numbers as sums of fourth powers and, apart from the reference *The Queen of Mathematics* by A.H. Beiler, is short of ideas. Can any reader help?

### Review of Numbers Count -148- Pseudo Skills in the sense of Florentin Smarandache

This article produced a very mixed response, ranging from the sharply critical "what a load of rubbish" to the mathematically detailed and enthusiastic. Much further material related to these topics can be found in *The Smarandache Journal*. Prizewinner, for "services to the cause of The Smarandache Function" both in the context of this Numbers Count and in more general areas — Charles Ashbacher, address above. More readers' responses to Smarandache ideas would be welcome and, if agreeable, submitted to *The Smarandache Journal*.

### PCW Contributions welcome

**Mike Mudge** welcomes readers' correspondence on any subject within the areas of number theory and computational mathematics, together with suggested subject areas and/or specific problems for future **Numbers Count** articles.

# Network **Nightmares**

**Stephen Rodda's** **been up to his neck in it — from servers that arrive with a password pre-installed but not disclosed, to machines that won't work on a network. It's a hard life.**

This month, I've been setting up a network for a client. A simple network for a publishing company, with five Macintosh machines and about 20 Windows for Workgroups 3.11 machines.

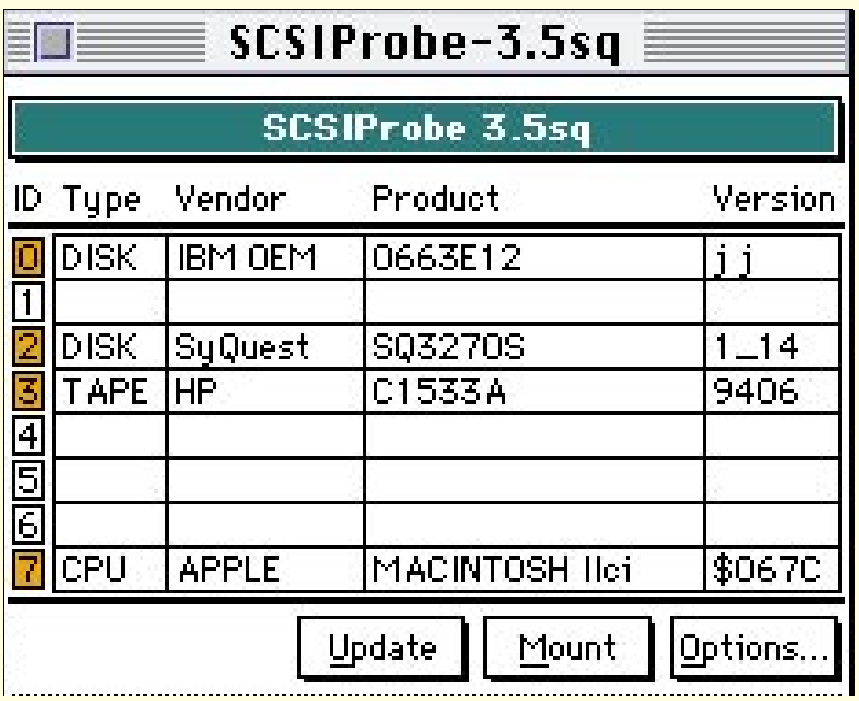
Plain sailing, you might think. Except it wasn't. The first problem I encountered was that the NT server had been configured (pre-loaded by the manufacturer/assembler) with a password for the Administrator account. Not that whoever had pre-loaded the networking software had thought to include a slip with the machine, stating what the password actually was. That would have been too helpful.

I telephoned the firm and asked what it was: "You installed NT on a machine and my client hasn't got a note of the password," said I. "I didn't do it," said the techie on the other end of the telephone. "Not you personally, dimbo, *you* in the plural. Listen," said I, telling him exactly who I am (it's good to be able to strike terror into the hearts of these people from time to time), "I'm installing this wretched network" (I may not have been as polite as this) "and you, plural, haven't been as good at installing Windows NT as my client thought you might have been. I'll expect a call back with the password within ten minutes."

Now, it's not often I invoke the power of the press but I felt that whoever had installed the blasted system and not left a password for the purchaser should have had his neural synapses reconfigured — with a sledgehammer.

Eight minutes later, the company called me back with the password. Full marks for pulling the stops out. By this time, I'd tried "VALE", "vale" and Vale" with no success. I'll leave you to draw your own conclusions about the name of the manufacturer. They told me that the Administrator password had been preset as "supervisor". Once there with the password, the system worked very well, and I'd have no compunction in recommending a system put together by the same manufacturer. The machine was a PCI Pentium 90 with an Adaptec 2940, a 2Gb SCSI drive and a Toshiba SCSI CD drive, and it performed well and in a stable manner. If you're looking for an NT server, then Vale do good ones. Just make sure they tell you the password first.

The network cabling had been put together by the client's electrician. It was 10baseT, they had tested the network cabling and it all worked. The backbone was 10base2, coaxial (or cheapernet) Ethernet between four Asanté hubs, and this didn't work. A swift examination showed that each hub had a single




*SCSI Probe (an invaluable application) showing an HP Backup unit on the SCSI bus. (This screenshot was taken on our own machine, not the client's)*

Ethernet cable going to it. The thing about Ethernet is that it's a bus system, and since it runs using wireless frequencies, you've got to be careful. The electrician had left the T-pieces in the (large) cable trunking in the wall and had added a small (about 30cm long) single extension from the T-piece to the 10base2 port on each hub. Normally, one can get away with this, but in this case it wouldn't work. I opened the trunking and removed the extensions, and managed to get three hubs to talk to one another, and to the server.

### Making a trunk call

The final hub refused to acknowledge the server's presence. Not one to pussyfoot around, I dropped a 10baseT cable from the final hub down the trunking and popped it into the backbone socket of the last hub to see the server. Now everything could see the server. Since the backbone was all working, I can only suspect the 10base2 connection to the hub, or the hub's own 10base2 circuitry.

Now, all could communicate except the HP LaserJets — I did mention the LaserJets, didn't I? These were connected into the Ethernet network using 10baseT via JetDirect cards, which enabled the Macs to see them without any problems at all. I thought I'd just read the AppleTalk printers on the NT server and then share them over the network. All seemed to work.

The MD of the firm thought he'd try to print over the network to the HP printers (one was a LaserJet 4M Plus, the other a LaserJet 4MV). Well, the printer threw a page with something like the text he'd sent. The output looked as though someone had wiggled the paper from side to side while the printer was laying down the toner — I've never seen anything like it. The whole printout was blurred.

Although not really panicking, I was somewhat nonplussed. I thought I'd try using one of the other protocols installed on the JetDirect card. I thought that for starters, I'd have a go at the DLC protocol. I loaded it into the NT server, restarted the machine in order to initialise it, and used Print Manager to create a printer. It recognised both printers quite happily and I managed to share them over the network. Once again, the MD tried to print. This time, the printer produced the page without a trace of delirium tremens.

I have no idea what had happened to give this effect, but you can rest assured I'll let you know when I find out. I hasten to add that whenever the Macs printed to the printer direct (or even to the queue I had created using the AppleTalk sharing) this problem didn't occur. There's only one thing I can say about this, and that's "weird".

### Mutinous machines

The Windows for Workgroups machines — which had hitherto worked only outside a network — joined the network with few problems. There were, however, one or two recalcitrant machines. These were divided into three types of problems.

I encountered the first when two machines complained that they didn't have enough memory when Windows for Workgroups was first loaded. These machines had only 4Mb of RAM. I realised that I had set them to load both IPX/SPX and Netbeui protocols. I removed the IPX/SPX protocol and they worked perfectly.

The second group of problematic machines did not even ask for a login name or a password. I tried removing networking and adding it — again to no avail. I wondered whether these, too, had a memory shortage and removed the codepage drivers from CONFIG.SYS and AUTOEXEC.BAT. This produced no improvement at all. I re-examined the CONFIG.SYS and found nothing. I looked through the AUTOEXEC.BAT — this time thoroughly — and discovered the statement "WIN/N".

The blasted machines were loading Windows for Workgroups explicitly with no network support. Removing this switch enabled the machines to join the network just like the others, and to function normally. These machines had apparently been supplied like this, as their network cards had been installed by the manufacturer, but since there was no network available the switch had been added to make them boot Windows without asking for usernames or passwords.

The third problem was with a single machine which wouldn't browse the network. It would log in to anything you mentioned, as long as the network path was already specified — but you don't want to do that. It's far easier to browse the network and attach whatever you want (or have access to).

I finally worked out that Windows' resources had been taken up by a whole raft of odds and ends which had insinuated themselves into the "load=" line of the WIN.INI, and the machine had only 60 percent or so of available resources. Once these had been commented out, the machine was able to browse the network just like any other.

Unfortunately, these weren't the only

## Eight on a plate

Dear Stephen,
I was very interested in your article on Microsoft Office and the new Windows NT shell in *PCW* December '95. I am thinking of upgrading my WfWG to something else, but the newness of Win95 worries me and I find myself looking towards NT. This also worries me!

Can you answer a few questions, taking into consideration the fact that I will only be using MS Works, Cakewalk Home Studio, Musicware Piano, MS Visual Basic and a fair amount of comms (i.e. not much multitasking)?

**1.** Will NT 3.51 with the new shell run on a P75 with a Triton chipset, 16Mb EDO DRAM, 256Kb pipeline burst cache, Stealth 64 2Mb VRAM and 850Mb HD?
**2.** How well does it run 16-bit and MSDOS programs?
**3.** Does NT have a 640Kb memory limit and all those things like XMS and EMS like in WfWG?
**4.** Should I wait for NT 4.0 or Cairo or whatever comes next? Will it run better on my machine? When will it be out? What is it like and so on?
**5.** If Beta copies of Cairo are, or will be, available, how do I get one?
**6.** Is there a demo/Beta version of NT I can use to evaluate whether or not to upgrade?
**7.** Is there an upgrade option from Windows for Workgroups to NT, which will therefore be cheaper?
**8.** Is NT an Operating System in its own right?

Phew! I would really appreciate it if you could answer these questions, or otherwise point me in the direction of more information.

**Garan Jenkin**

*Garan, you do ask a lot of questions! The answer to your first question is a definite "Yes". As far as the second goes, I'd respond that although NT will run DOS and Windows 16-bit programs, you should be looking towards the future rather than the past.*

*Most applications still in use will be upgraded to 32-bit-clean versions within the next couple of years so they can take advantage of their full speed under Windows 95. This should also make them Windows NT-compatible. There are some programs which will run under Windows 95 and 3.11 which most definitely won't run under NT. Most of these, however, involve accessing either the hardware (like Norton's Disk Doctor) or the operating system (like the Adobe Type Manager) directly. Remember, too, that NT's security certification makes both of these actions undesirable.*

*The reply to number three, is: "Most definitely not!". NT is a real 32-bit operating system, and therefore the concepts of the 640K DOS area, EMS and XMS have been totally removed. It will, however, emulate EMS and XMS and the 640K limit for 16-bit programs which require them to be run in a separate virtual machine.*

*Your fourth is a question to which Bill Gates may know the answer. I certainly don't. As far as whether you should wait or not, remember the old computer adage that the moment you've got something home, it's out of date.*

*I'm afraid I'll have to pass on the next question as well. But in reply to question six: demo versions of NT abound on many magazine cover disks. Go along to your newsagent and have a look on the covers of the various computer magazines on the shelves. These are time-limited. As far as an upgrade from Windows for Workgroups is concerned, I think you won't be lucky. However, check with the Microsoft Upgrade Centre.*

*As far as the eighth question is concerned: you really drop a good bombshell, don't you? The answer is a resounding "most definitely, positively and absolutely". As opposed to Windows and, to a certain extent, Windows 95, NT doesn't run on top of another operating system. If it were that simple, the security aspect of the operating system would be compromised.*

*Finally, dealing with the applications you have mentioned (MS Works, Cakewalk Home Studio, Musicware Piano, MS Visual Basic and comms), I can guarantee that MS Works and MS Visual Basic will run. Some comms programs don't like NT because they try to gain direct access to the hardware of the port (which NT will not allow), so it may be better to turn off any hardware accessing you can and try to get the comms program to access NT's emulation of the port.*

*Not being a musician, I'm afraid I know nothing of the other programs and I would suggest you contact the manufacturers in order to find the answer.*

problems. My clients (who also read this column) had bought a DAT drive to back up the network. I suggested they use it occasionally (whenever they had cause to change the NT system) from the server, but that they use it routinely from one of the Macs machines with a copy of Arcserve Macintosh to back up the five Macs and the NT server. So far, so good. Unfortunately, the DAT wasn't working on either the NT server or on any Mac. I thought this was a little odd, and used a copy of SCSI Probe on the Mac to see if I could contact it on the bus. It showed up. I then plugged it into the Adaptec 2940 and rebooted the server. It showed itself there, too. "Curiouser and curiouser," I thought. I opened the drive and noticed that the ribbon cable wasn't properly attached, and that there were two loose wires hanging around in the casing. Please note that this drive hadn't been supplied by Vale — having reviewed one of their machines (in an article for our sister magazine, *PCM*) a while ago, I can't disparage their build quality. I decided that this drive had to go back to the manufacturer. It just wasn't properly put together.

While I was configuring network support for the cards I installed in the machines without cards, I noticed that Windows recognised them as NE2000s. These cards stated that they were NE2000 compatible, but for some reason they weren't. Once the correct driver for the cards had been installed from the driver disk which came with them, they worked perfectly.

The moral of this little tale is always to use the drivers which are supplied, even if the cards pretend to be NE2000 compatible.

### It's a true story

Just by way of a little levity, I have subscribed to *This Is True*, a sideways look at some of the news stories published throughout the world. It is the work of Randy Cassingham and is distributed through the Internet by email. It's just the thing to brighten up these dull winter days, containing things like new ways people have found to commit crimes stupidly. Well, it makes me laugh, anyway. To receive *This Is True* every week, free by email, contact listserv@netcom.com with the message "subscribe this-is-true".

**PCW Contacts**

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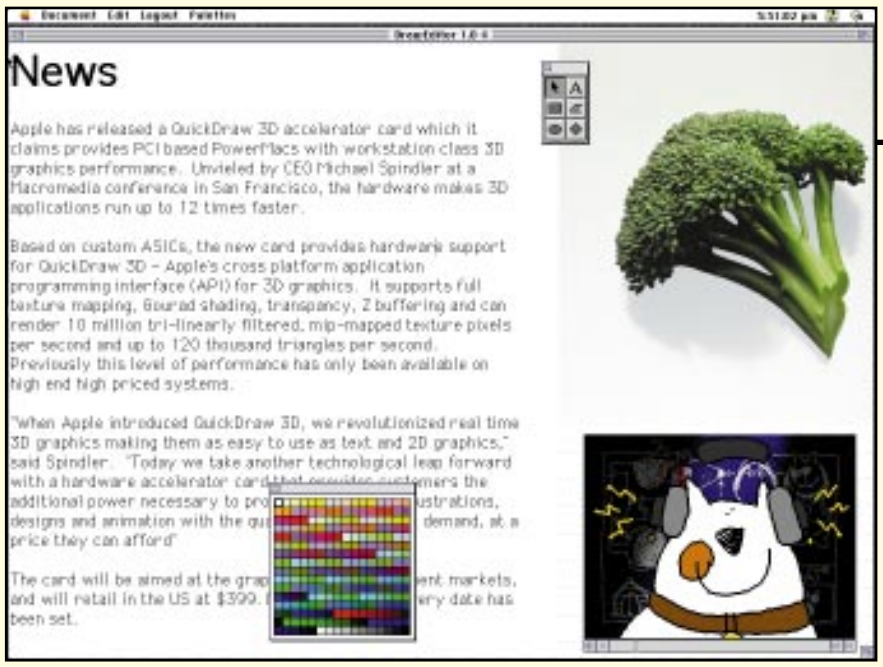
# What's up, OpenDoc?

**Apple's new component software architecture could be set to reshape the way we work with Macs, PCs and other platforms. Chris Cain brings you an overview of the new system. And, use our handy quick-reference table to sort out current Apple extensions.**




*This example of an OpenDoc document combines graphics, text and video, each of which can be edited with its own part editor*

Apple recently released the first version of its component software architecture, OpenDoc, which plays a major part in the company's future plans. OpenDoc could completely reshape the way in which we work with Macs, PCs and other platforms. In fact, it's my Utility of the Month.

OpenDoc is officially described as a multi-platform, component software architecture that enables developers to evolve applications into component software, or create new component software applications. In more simple terms, it's about breaking down today's monolithic software apps into smaller, more manageable components that can then be mixed and matched to suit every user's needs.

At the moment, if you wanted to create, say, a newsletter containing text, graphics and spreadsheet data, you would probably edit each piece of data in a separate application and either export it as a file and import it into your main application, or cut and paste info using the clipboard. Either way, you end up loading three or four different packages and using only a subset of the tools on offer. It takes a long time and you can experience problems such as unsupported file formats and lack of memory.

With OpenDoc you have "Part Editors" instead of applications and your work is based around documents called "Stationery". Part Editors are small sets of tools for doing jobs like editing text, manipulating pictures and so on, and Stationery files are templates for doing certain types of work. Each different type of Stationery contains links to the Part Editors used for that type of job.

To prepare the same newsletter with OpenDoc you would use a piece of stationery that has been set up with links to text editing, drawing and numeric data Editors. You'd then create your data using these and if you wanted to import a file created with something else, you'd just drag it from the desktop onto your document. If you've set up a stationery file without a certain set of tools, you just drag the appropriate Editor onto your document and they appear.

The beauty of working like this is that you use only as much RAM as you need for the job, and all tools are available whenever you want them without loading lots of individual applications. Part Editors should also be much easier to develop and maintain than larger applications, and will give small developers more of a chance to compete with large companies like Microsoft.

There will still be room for big applications in an OpenDoc world, but they will need to support embedded OpenDoc parts.

Apple's OpenDoc 1.0 contains a

## Mac software extensions: Part 1

With all these software updates appearing left, right and centre, one of the most common questions I'm asked is: "What's the latest version of this Extension or that Control Panel?" To answer these questions, here's an up-to-date list of shipping Mac system software courtesy of Apple. Due to the sheer size of it, I've had to split it into two sections. Part two will appear next month.

| Name | Version | Name | Version | Name | Version | Name | Version |
|---|---|---|---|---|---|---|---|
| 32-Bit System Enabler | 1.0.3 | AppleTalk ImageWriter | 7.0.1 | DocViewer | 1.1.1 | LaserWriter GX | 1.1.2 |
| 8*24 GC (Extension) | 7.0.1 | Apple Telecom | 2.3 | DOS Compatibility SW | 1.0.0 | LaserWriter IISC GX | 1.1.1 |
| 950 Color Addition | 1.0 | Apple Video Player | 1.3.1 | Drive Firmware Update | 1.2 | LaserWriter Utility | 7.7 |
| A/UX | 3.0.1 | AppleVision Display SW | 1.0.1 | Drive Setup | 1.0.2 | LaserWriter Select 300 | 1.2 |
| A/UX | 3.1 | Assistant Toolbox | 1.2 | Duo Battery Patch | 1.0 | LaserWriter 300 | 1.2 |
| A/ROSE | 1.2.1 | At Ease | 3.0 | Easy Access Ctrl Panel | 7.2 | LaserWriter 300 GX | 1.1.1 |
| ADSP | 1.5.1 | At Ease for Workgroups | 3.0 | Energy Saver | 1.1 | LaserWriter Select 360 | 1.1 |
| Apple IIe Card SW | 2.2.1d1 | AudioVision (extension) | 1.0.2 | EtherTalk | 2.5.7 | LaserWrtr Select 360 Fax | 1.1 |
| Apple Backup | 1.4 | Auto Power On/Off | 1.0 | Express Modem | 1.5.5 | Likewise | 1.0.1 |
| Apple Color Printer | 1.0 | AutoRemounter | 1.2 | Express Modem Tool | 1.5.5 | LW Select 310 | 7.0.1 |
| Apple DocViewer | 1.1.1 | AV Serial Extension | 1.0 | Express Modem 14400 | 1.0 | MacApp | 3.0.1 |
| Apple Event Manager | 1.0.3 | AW Server 95 | 1.1 | Express Modem CCL | 1.0 | MacCheck | 1.0.5 |
| Apple File Exchange | 7.0 | AWS 95 Tune-Up | 1.0 | Extension Manager | 3.0 | MacinTalk Pro | 1.4 |
| Apple Font Pack | 1.0 | Basic Color Monitor | 1.0 | eWorld | 1.1 | Macintosh Basics | 5.0 |
| Apple HD SC Setup | 7.3.5 | Basic Connectivity Set | 1.1.1 | eWorld Web Browser | 1.0.2 | Macintosh Common Lisp | 2.0.1 |
| Apple Guide | 2.0 | Battery DA | 7.1.1 | Fax Extension | 1.5.5 | Macintosh Easy Open | 1.1.1 |
| Apple Internet Router | 3.0.1 | Battery Recondition | 1.2 | Fax Sender | 1.5.5 | Macintosh Quadra Extra | 1.0 |
| Apple LAN Utility | 1.0b3 | CD-ROM Setup | 5.1.2 | Fax Terminal | 1.5.5 | Macintosh Visca Driver | 1.2 |
| AppleLink | 6.1 | Chinese Language Kit | 1.1.1 | Fax Viewer | 1.5.2 | MacODA | 1.0 |
| Apple Media Tool | 1.2 | Chooser | 7.5 | Fax Cover | 1.5.2 | MacOSI | 1.1 |
| Apple Menu Options | 1.0.2 | CloseView | 7.2 | Font/DA Mover | 4.1 | MacsBug | 6.5.2 |
| Apple MIDI Manager | 2.0.2 | Color Picker | 2.0.1 | GeoPort Extension | 2.1 | MacSNMP Admin | 1.0.2 |
| Apple MIDI Driver | 2.0.2 | Color SW 2400 | 2.1.1 | GeoPort for Power Mac | 2.1 | MacSNMP Client | 1.0.2 |
| Apple Modem Tool | 1.5.3 | Color SW 2400 GX | 1.0.1 | Hardware System Update | 2.0.1 | MacTCP | 2.0.4 |
| Apple Personal Diagnostics | 1.1.3 | Color SW Pro | 1.5 | HyperCard | 2.3 | MacTCP Admin | 2.0.4 |
| Apple Phone | 1.0.1 | ColorSync | 1.0.5 | HyperCard Player | 2.3 | MacTCP Developer's Kit | N/A |
| Apple Photo Access | 2.0 | CPU Energy Saver | 1.0.6 | HyperScan | 2.0 | MacTCP Token Ring Ext. | 2.0.4 |
| Apple Printer Utility | 2.0 | Curare | 1.0 | ImageWriter | 7.0.1 | MacTerminal | 3.0 |
| Apple Remote Access | 2.0.1 | DAL Software | N/A | ImageWriter GX | 1.1.1 | MacX | 1.5 |
| AppleScript | 1.1 | DART | 1.5.3 | ImageWriter LQ GX | 1.1.1 | MacX.400 | 1.0 |
| AppleSearch Client | 1.5 | Desktop Printer Ext. | 1.0.3 | Installer | 4.0.3 | MacX25 | 1.2 |
| AppleSearch Server | 1.5 | Desktop PrintMonitor | 1.0.3 | Inter*Poll | 1.0.1 | MIDI Manager Extension | 2.0.2 |
| AppleShare File Server | 4.1 | Desktop Printer Spooler | 1.0.3 | Internal HD Format | 1.3 | MountImage | 1.2 |
| AppleShare Print Server | 4.0.2 | Disk Copy | 4.2 | Japanese Language Kit | 1.2 | Mouse Basics | 4.5 |
| Apple Shared Lib. Mgr. | 1.1.2 | Disk First Aid | 7.2.1 | LaserWriter | 7.2 | MoviePlayer | 2.1 |
| AppleTalk | v.58.1.5 | Display Enabler1 | 2 | LaserWriter 8 | 8.3.2 | | |

Control Panel for setting up associations between Editors and different types of data, a few sample Stationery files and some very simple Editors to accompany them. I've been putting these through their paces over the past few weeks and have successfully managed to build a document using this method. Although it's difficult at the start, once you get into it everything begins to make sense.

If you want to see for yourself what OpenDoc is all about, you can download it from Apple's World Wide Web support sites.

### Tree surgery

There's good and bad news regarding software updates for anyone using Speed

## Surprise Surprise

Apple engineers are renowned for hiding messages and other goodies in their hardware and software, and waiting to see who discovers them. I have found a particularly nice one hidden inside the new PCI Macs. To access it you first need to load Apple's Notepad program, then type in the words Secret About Box. Once you've done this, select the words with the cursor and drag them onto the desktop. The result is an impressive, and marginally interactive, graphical flag combined with a scrolling list of the System 7.5.2 programmers. Dragging with the "p" key held down produces a different result — see for yourself.


*Havoc uses QuickDraw 3D to create realistic landscapes. The action is smooth on a PowerMac and the graphics can be further improved with Apple's 3D acceleration board*

Doubler from Connectix. Currently at version 1.0.2, this popular program is due for another tweak soon, following reports that the Speed Access extension, which improves hard disk performance, can cause problems.

It appears that under certain conditions Speed Access can cause errors, known as b-tree errors, to appear in the hard disk directory structure. Apparently this only happens after a rare set of system calls have been used, but enough people have complained about it to warrant an update.

Version 1.1, which fixes these errors, should be available by the time you read this and an updater for old master disks can be obtained from the Connectix software support site on the Internet.

Connectix strongly recommends that all users upgrade, even if they haven't experienced any problems, and new floppies will be sent out to all registered users. The company additionally suggests running a disk utility, such as Apple's Disk First Aid or Norton Disk Doctor, to clear any b-tree problems before installing the new version.

Other items included in Speed Doubler 1.1 are improved compatibility with Microsoft Excel 4.0, Apple PowerPC upgrade cards and future versions of System software. It will also now work with Premise 2.1 (from West Publishing) too, and provides high speed serial transfers using Speed Emulator.

### Dogfights cat

I have been spoiled for choice this month when it comes to new entertainment software, with the arrival of several good titles including a demo of the first to use QuickDraw 3D.

First into my CD-ROM drive was the Mac conversion of the best-selling PC title, Wing Commander III — Heart of the Tiger. This space age adventure continues the story of man's battle for survival against the Kilrathi, a cat-like warrior race. It features 3D graphic dogfights and uses real actors to play the parts of the characters in the game. As hero, your alter ego is played by Mark Hamill (perhaps best known in his role as Luke Skywalker). Other actors helping to save the galaxy include Ginger Lynn Allen and Malcolm McDowell. Wing Commander III has a good mix of non-interactive video footage and realtime blasting, and the musical score is pretty good, too.

For those who want even more hands-on gaming, Havoc and Shockwave look like the answer. Both are hardcore 3D shoot-'em-ups and Havoc uses QuickDraw 3D to generate fully texture-mapped, smooth-scrolling landscapes. Demos of these titles are downloadable from various Web sites, but be warned: they come in at around 7Mb each.

### PCW Contacts

**Chris Cain** loves to hear from *PCW*'s Mac-using readers. He can be contacted via email as **Chris_Cain@PCW.CCMAIL.COMPUSERVE.COM**, **Chris@CIX.COMPULINK.CO.UK** or as **Cain@eworld.com**

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Apple's OpenDoc Website is at **http://www.opendoc.apple.com**
Speed Doubler information and updates can be downloaded from the Connectix support site at **http://www.pcworld.com/connectix/techsupp.html**
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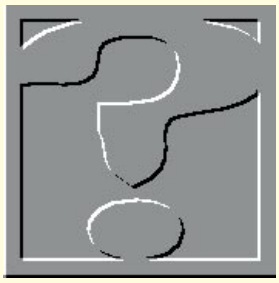


# Any **questions?**

**If you have a PC problem or think you could help out other readers, contact Frank Leonhardt. New this month is Frank's Bargain Basement for computer equipment where he sorts the men from the toys.**

Q I own a Compaq Prolinea Net 1/25S which has two ISA expansion slots and no spare drive bays. Expansion slots contain modem and sound cards. I need to be able to add a CD-ROM; speed is not too important. Can I use the parallel port to connect an external CD-ROM and still use my printer on this port? I have been given conflicting views on this subject.
**Rob Baker**

*It is possible to connect an external CD-ROM drive to a parallel printer port and it sounds like a good solution to your problem.*

*Almost every gadget you plug into a parallel port claims to work with your printer at the same time, but success isn't guaranteed. In particular, parallel port devices and especially software protection "dongles" make use of some of the optional lines on the Centronics interface standard. This is fine as long as your printer doesn't need them.*

*Parallel port drives often work with your printer by having an output port on the back which appears to the printer to be the same as the port on the computer. The computer can talk to the drive through the printer port using a code on the interface to tell the drive that the data is for its attention.*

*If the drive doesn't recognise the code it will assume that it is data for the printer and pass it on via its output port. This process is called daisychaining as it allows (in theory) any number of devices to be connected nose to tail, as long as they each have different recognition codes.*

*If you find you can't get away with daisychaining in this way, you can always buy a selector switch. This is a simple box with an input port, two or more output ports and a knob. You plug the computer into the input port and all your parallel devices into the outputs. The knob is used to select which output is currently active and takes the form of a mechanical switch — no chance of incompatibility here! You could, of course, simply swap leads but this tends to result in annoyance and connector damage after a while.*

*Unfortunately, using these arrangements, you will have to re-boot the machine to get the CD-ROM drive working if it wasn't selected to begin with.*

*Another solution would be to connect the printer to a serial port. If your printer doesn't have a serial interface you can buy an adaptor. Serial printer connections are, however, generally slower than parallel ones — whether this has any impact depends on the speed of the printer mechanism and the type of printing you do.*

*You could consider changing your sound board for one with a CD-ROM, or preferably SCSI, interface. A card like the Creative Labs SoundBlaster-16 SCSI could be just what you need if you're cramped for expansion. It can control up to seven external devices of varying types including CD-ROMs, CD-writers, scanners and fast hard disks. SCSI peripherals tend to cost a little more but they are very flexible.*

## CD-ROM drive swap

My hard disk is drive C: and my CD-ROM drive is D:. I want to fit a second hard disk as drive D:. How can I change the CD-ROM drive to E:? I have DOS 6.0 and Windows 3.1.
**J Dawson, Prestwick**

*This isn't actually a problem. The CD-ROM system (MSCDEX) assigns the CD-ROM letters to the drives it finds, starting with the next one available. By the time MSCDEX is loaded in your AUTOEXEC.BAT file, the system BIOS will already have allocated the letters to the hard drive partitions it has found — in your case C: and D:. The next drive will always be E:.*

*However, if you wanted to keep your CD-ROM at D: and make your second hard drive E: you would be asking a much tougher question. You can use the /L parameter in MSCDEX, and to force it you use a particular drive letter rather than the default, but you can't force it to displace a letter which is already in use.*

*Changing the subject slightly, it's a good idea to tell MSCDEX to start allocating drive letters, leaving a gap after your last hard disk. This means that if you ever add or remove hard disks your CD-ROM drive will keep the same letter, which should prevent the software which uses it from becoming confused.*

## System update

As we move into a new era with Windows 95 I read the inevitable in *PCW*: new software really needs a bigger machine than ever before. The packages that make up suites like Microsoft Office now take up vast amounts of space but if you need compatibility with business systems you need to keep up.

Back in 1991 I bought a Tandon 386SX 20MHz PC with 4Mb of RAM and a 40Mb hard disk. I've since added another 110Mb drive with disk compression and 6Mb of RAM. The result is okay but not exactly fast.

I'm considering swapping the two disks for a single 500Mb drive without compression as a way of improving performance. Is this the most cost-effective improvement I could make?

I could also take the RAM up to 16Mb but is this all going to be a waste of time? It certainly saves a lot of money compared to changing the entire machine at a cost of £2,000.
**Philip Sarell, London**

## Frank's Bargain Basement

I'm frequently asked for my opinion, by various trusting souls, on some item or other seen in a catalogue or advertisement. Sometimes these items are bargains, often they are a nice idea with a disappointing implementation, and occasionally they are complete rubbish.

Each month, I hope to feature one of these items: something to avoid, something fun, something to solve a common problem, or something offering exceptional value such as the Panasonic 562B CD-ROM drive.

*The old Panasonic 562 drive is well matched to older PCs*

This unit, also known as the Creative 563, has been around since 1993. Okay, you guessed it; this means it's only double-speed rather than quad. True, but it's still got a lot going for it. For a start it has a Panasonic interface of the type commonly found on SoundBlaster boards, including the original SoundBlaster Pro, 16, 16-Pro, AWE and loads of compatibles. This makes the interfaces cheap and plentiful.

"Ah," you may say, "most CD-ROM drives are IDE interfaced now and I've got an IDE on my machine." This may well be the case but unless it's a new machine with E-IDE, getting an IDE CD-ROM connected tends to involve incompatibilities, aggravation and cash. The SoundBlaster/562 combination was designed to work with machines built in the early 1990s, so it does work. It has also been around for a long time in large numbers — everything from OS/2 to Windows 95 knows about it. Will everything recognise this month's state-of-the-art combination?

So what about double-speed against quad-speed? Actually, most of the time spent accessing a CD-ROM is in finding the right place on the disk. The double *vs* quad-speed refers only to the transfer rate once the information has been found. With many applications you will hardly notice the difference and double-speed is the MPC2 standard for video.

The last few 562/3 drives are being sold off at around £50 now. You could pay £100 for a cheap IDE, but I think a tried and trusted, compatible double-speed at this price is a bargain.

● I intend to make Frank's Bargain Basement a regular feature of this column. This will deal with items (average price of around £75) of the type which readers often ask me about. For example: expansion cards (all types), driver software, end-of-line bargains and useful tools and gadgets. Next month I hope to cover the fun and games in the low-cost modem market and/or supply problems with 15in monitors.

*I hesitate to jump on the bandwagon of old computer systems being updated for the sake of it. After all, if something worked when it installed, why risk changing it for something which might not. This applies to big systems as well as PCs. However, as you say, a need to be compatible with other people's software means you don't always have a choice in the matter.*

*It's a common misconception that the latest processor with the highest number of MHz as a suffix will be the best performer — a 386 machine with plenty of RAM can easily outperform a Pentium with 4Mb when running RAM-hungry software like OS/2 or Windows 95.*

*With 10Mb of RAM your system is probably not deficient in this area but a faster hard disk wouldn't hurt at all. You could use the new hard disk in a future replacement machine so the money wouldn't be wasted.*

*To keep up with the march of progress, if it can be called progress, you'll need to consider a Pentium-75 motherboard with 16Mb of RAM when you change to Windows 95. A P75 may not be strictly necessary from a speed point of view but the enhanced input-output facilities of a modern motherboard are. Enhanced-IDE (with accompanying BIOS), PCI expansion slots, buffered serial ports and efficient memory cache systems count for a lot.*

*Personally I'm sticking with my 486SX-25 VESA bus machine with 8Mb of RAM for as long as I can get away with it. In effect this means: as long as I can get away without Windows 95.*

### Graphics speed-up

While playing a demo from a free cover disk CD I realised that I had to make my PC faster in the graphics department.

I have an Oak 77 1Mb card on my 486DX2/66. Anything runs fine in VGA but if I try SVGA the card is either incompatible or terribly slow. I would like to know whether a new 2Mb card would significantly improve the performance of my PC. If so, could you suggest a good VESA one for less than £140?

The trouble is that if I buy a new VESA video card it will not be compatible with a Pentium PCI motherboard when I upgrade. I have seen the triple bus motherboards but I am not sure whether they will continue to be popular.

**Phil Garner, Harpenden**

*You can easily end up spending silly money on fancy graphics boards with greased-whippet acceleration modes. In my experience it just isn't worth it for most applications. Nevertheless, a graphics board with something extra in the speed department can make a cost-effective difference to overall performance.*

*The big problem with high-end graphics boards is the software drivers: it may well come with a driver disk for your current needs, but what about Windows 96? Even if the drivers are there, a disproportionate number of mysterious Windows crashes can be eliminated by using the standard Microsoft VGA driver instead of the accelerated item supplied.*

*Personally, I'd prefer anything with a good price/performance ratio and industry-wide acceptance over those costing twice as much with a 20 percent speed-up.*

*My favourite VESA card has a Cirrus Logic 5428/9 chipset and costs around £60. It outperforms rivals costing three times as much and has been around for two years now. This means that most operating systems and games ship with drivers for it, as standard — and they work! The Tseng ET4000 and the S3 chipsets are well supported too, and are good performers.*

*Apart from the implications of switching from VESA to PCI in the future, there is another good reason for not spending vast sums of cash on a graphics card at present: a new standard is coming — VMC (VESA Media Channel). This is a bus system which allows sound cards, M-PEG decoders, video boards and suchlike to talk to each other without having to route through the processor. Technically it looks good, although it might put Intel's nose out of joint as a better alternative to motherboard-bound PCI.*

### PCW Contacts

**Frank Leonhardt** is an independent computer boffin who can sometimes be contacted on **0181 429 3047** or via email as **frank@dircon.co.uk** or **leo2@cix.clink.co.uk**. Letters may be sent to *PCW* at VNU House, 32-34 Broadwick Street, London W1A 2HG, but individual replies are not normally possible. Please do not ask about cover disks or CD-ROMs.

# **Pica** printer

**Should you choose a laser or an inkjet printer? Eleanor Turton-Hill explains the technology, the pros and cons of each, as well as other things you should consider before making your decision.**

Buying a printer is not a simple business these days. Even on a small budget of around £300, there's a whole range of products from which to choose. Here, I've provided an overview of what's available on the market, as well as explaining the pros and cons of different printer technologies.

### Laser or inkjet?

The first thing you need to decide is whether you want a laser or an inkjet printer.

Laser printers produce much better quality black and white documents than inkjets, and they churn them out much faster. And laser printers are designed more for the long haul — that is, they turn out more pages per month, at a lower cost per page, than inkjets. So if you need an office workhorse, the laser printer may be your best option. Another consideration, which is important to offices, is the handling of envelopes, card and other non-regular media, and laser printers tend to score far higher on this front than do inkjets.

Nevertheless, inkjets have one massive attraction over lasers: they produce colour more economically than laser printers — and that's what makes them so popular among home users. Inkjet printers are much smaller and cheaper than lasers, and they produce better quality output than the dot matrix. Research in inkjet technology is making continual advances, with each new product on the market showing improvements in performance, usability, and output quality.

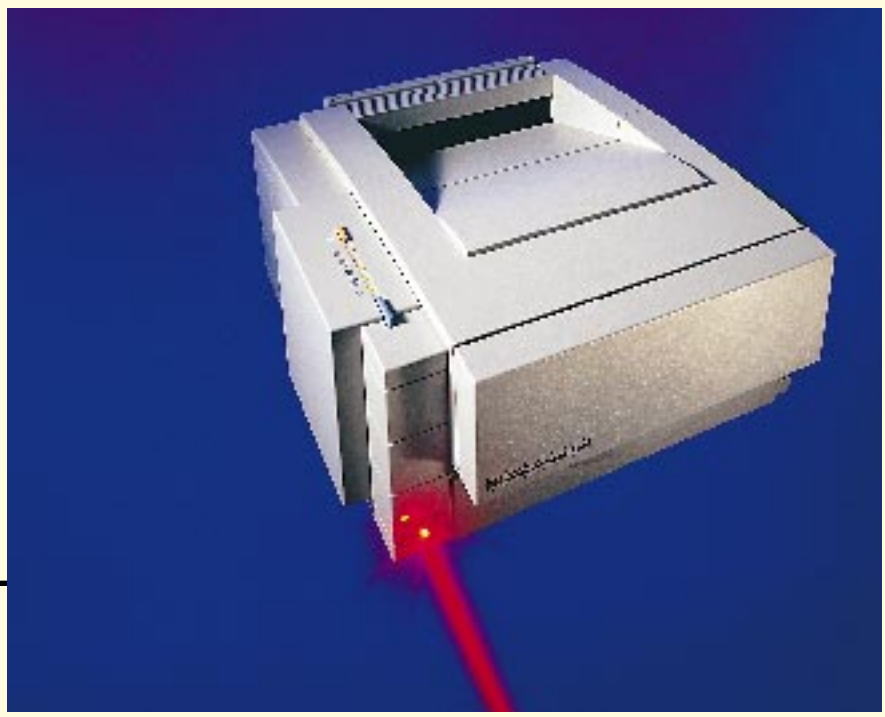
The down side is that while inkjets are generally cheaper to buy than lasers, they are more expensive to maintain. Cartridges need to be changed more frequently, and special coated paper, which produces a better quality output, is expensive. Nevertheless, unless you're printing in large amounts, you may well find that a colour inkjet printer is the best solution for you. Colour inkjets are in many ways more versatile than mono-lasers and so become a much more attractive package.

If your budget stretches to the £500 mark it may be worth considering buying one of each. You can get hold of a decent colour inkjet now for about £200, and the cheapest lasers start at about £280.

### CMYK

Colour is rapidly becoming a standard function for inkjets. There are still a few monochrome inkjet printers on the market, but most of the new models which have appeared during the past year offer colour functionality. Most inkjets these days are able to print in both colour and black and white, but the way they switch between the two modes varies.

The basic design is determined by the



*A printer like this LaserJet 5P from Hewlett-Packard will give good-quality output at workhorse rate*

number of inks in the machine. Printers containing four colours — cyan, yellow, magenta, and black (CMYK) — can switch between black and white text and colour images on the same page with no problem. Printers equipped with only three colours can't.

Many of the cheaper inkjet models have room for only one cartridge. You can set them up with a black ink cartridge for monochrome printing, or with a three-colour cartridge (CMY) for colour printing; but you can't set them up for both at the same time.

This makes a big difference to the operation of the printer because each time you want to change from black and white to colour, you must physically swap the cartridge. When you use black on a colour page it will be made up of the three colours, which tends to result in an unsatisfactory dark green or grey colour, usually referred to as composite black. If you can afford it, it's well worth spending a little extra money on a four-colour model.

### Quality of output

The quality of output from colour inkjet printers ranges from poor (with dull colours and visible banding) to excellent, approaching photographic quality. The quality of results from an inkjet is heavily affected by the paper quality being used. The way inkjets fire ink directly at the paper means that poor quality, absorbent paper leads to visible feathering of characters. High-resolution paper, or glossy paper, produces much brighter colours and crisper edges on graphic and photographic images.

### Where chemistry comes in

One of the major goals of inkjet manufacturers is to develop the ability to print on almost any medium. The secret to this is ink chemistry, a subject closely guarded by most inkjet manufacturers. Hewlett-Packard, Canon, and Epson, to name but three, invest large amounts of money in research and are making continual improvements in ink pigments, lightfastness and waterfastness, and suitability for printing on a wide variety of media. These advances in ink technology are bound to find their way to the desktop over the next few years.

Laser printers are not affected by paper quality to the same extent as inkjets. In the case of the former, the major influence on quality is the resolution capability of your printer. Until recently, 300dpi (dots per inch) was about the best you could expect from an office printer, but now the market is littered with 600dpi printers. These will produce significantly better results, particularly when printing scanned images or graphics. At 600dpi, four times the number of dots are produced per inch of paper, resulting in a smoother tone gradation and a final image which looks pretty much like a black and white photograph.

Laser printers are not fully media-independent, and the quality of paper you use will affect the output to some extent. The jagged edges of unenhanced 300dpi print are visible when using ordinary copier-grade bond paper. At 600dpi or enhanced 300dpi the quality improves, but a resolution any higher than this will not be noticed unless you invest in a better quality paper.

Using poor quality paper in laser printers has other side effects. The drum inside the printer can become scratched, rapidly wearing out the surface and leading to deterioration in print quality and, inevitably, replacement of the drum. It is important to follow the manual's guidelines on paper quality and weight which is usually recommended as 75gsm copier paper at about £2.50 for 500 sheets. Higher quality paper at 80 or 90gsm costs more than twice this amount for a smoother print.

The way paper is stored is important too, as extreme heat or humidity can affect the way it feeds through the printer. Curled or damp paper soon causes paper jams and seizes up the system.

If you do a lot of printing on heavyweight paper or card, take note of the way the paper passes through the printer. The normal paper path involves turning the sheet through an S-shaped bend, but many lasers include a straight-through path which prevents the paper from curling as it travels through the machine. Others additionally provide an envelope feeder which will allow you to stack and feed multiple envelopes so you don't have to manually feed them as single items.

## How do colour laser printers work?

Laser technology gives much better quality colour results than inkjet, but laser printers are more expensive to make; consequently, colour lasers have not hit the mass-market in anything like the same way. Most colour lasers are massive pieces of equipment (about the size of a deep-freeze) and cost several thousands of pounds, which restricts their market to large, corporate organisations and medium-sized businesses.

The printing process in a laser is far more complex than that of an inkjet, which accounts for its high production cost. A colour laser is essentially four monochrome printers in one box. The problem with colour printing is how to get four different colours of toner onto the same piece of paper. Dye sublimation, thermal wax and some inkjet printers run the paper through four times but this is not practical in a laser printer: the heat would cause problems with many types of paper and transparency; and everyone is used to laser printers using ordinary copier paper.

In some colour lasers, the drum goes around four times; first the yellow is put onto the drum, then the cyan, then the magenta and finally the black. By using toner with different properties it is possible to put one on top of the other. The end result is the entire image, on the drum, which can then be transferred to the paper and fused with heat.

The problem with doing things this way is that the black toner, the last one to be applied, has to be attracted through three layers of existing toner. The electrostatic charge on the drum is not strong enough to do this through solid toner so the colours are dithered and a gap is left in areas of colour to leave room for the next layer of toner.

To get round this problem, some colour lasers use an offset process. The toner is rendered onto an electrostatic belt made of mylar plastic which has the same properties as the drum. The colour is then transferred to a second drum which goes around again for the next colour. Because the belt is cleaned each time, and because there is only ever one layer of toner to be attracted to the belt, the colours are better with this system, but it needs more moving parts, is thus more complicated, and so will wear faster.

A few years ago a colour laser would cost you well over £10,000. Technological advances have brought the colour laser down to about £5,000 which has no doubt widened its market, but unfortunately it is still way beyond the pocket of most small businesses and individuals. Continual research into the printing process may bring about an affordable colour laser in the future, but it is often argued that the restrictions inherent in the laser printer process will make it impossible to reduce the cost or size of the machine.

## PCW Contacts

**Eleanor Turton-Hill** welcomes any feedback and suggestions from readers. She is on **ellie@pcw.ccmail.compuserve.com**

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# ChipChat

Okay, we give up, it's a fair cop. As pointed out by *PCW* reader Ruben Harris of Surrey, the total ASCII value of the name William Henry Gates III is not 666 as stated in the December issue. The correct name should have been BILL GATES III, with the last bit counting as 3 (yes, it's cheating).

Moreover, our Ruben is absolutely convinced that the legions of darkness use Macs instead of PCs. He points out that APPLE INC. (including space and full stop) also equals the number of the beast, and believes Macs are the worst thing ever made. Perhaps this explains why the Mac version of Doom II: Hell on Earth is even better than the PC version…

● In other news, rumour has it that an heir to the Microsoft throne is now under development. Jokes about the schedule slipping aside, current projections put the birth at around June, possibly the 6th. With this in mind, perhaps Damien would be a good name for a boy. And on that note, we'll end all this nonsense once and for all…

● "A mobile phone is for life, not just for Christmas." So went the gloomy warning from a Telecom Users Association spokesman, quoted in the *Independent*, pointing to the hidden costs of long-term mobile ownership even though the initial cost is low. Rumours that the Battersea Phones Home has been swamped by unwanted Christmas gifts is of course completely unfounded…

### Bill Trouble In Little China

Proving once again that Bill Gates really likes a laugh, Microsoft is sponsoring an "educational" sitcom to be broadcast in China. Along with fellow sponsor Compaq, Microsoft will ensure that the Chinese population is guaranteed a laugh a minute with such side-splitting plotlines as How We Learned To Create A Spreadsheet and Why Software Piracy Is Bad (bit of a problem in China, remember). This particular episode of "My Computer Family" features a character who invents a computer game only to turn round and find copies everywhere. Teams of writers have been drafted in to ensure that people in China know really good software when they see it. Especially if it comes with a photocopied manual. ■


*Cliff Stanford, managing director of Demon, was recently interviewed, also in The Independent. His 53 percent stake in the company is now worth £14m, but "I'm still driving the same 18-year-old car...". Cliff omitted to point out that his ageing car is a pink Rolls Royce*

## Leisure Lines

**The following text was omitted from the Leisure Lines column on page 260 because of lack of space:**

**Winner of December 1995 Prize Puzzle**

A pretty good response to the December problem — just less than 100 entries. Alas, a word was omitted from the statement of the problem — we should have said that the number of geese was one less than one third of the number of hens. Some of you realised this, but since the wording used meant there were 5 possible solutions, we decided to allow any of these. Most readers submitted all 5 anyway. The answer we intended was:

7 geese : 14 sheep : 15 horses : 24 hens : 20 cows

The winning card, drawn at random, came from a lady in Wales — Ms Catherine Hart of Conwy in Gwynedd. The card also contained a picture of the Menai suspension bridge and the longest placename, Llanfairpw.....gogogoch. Thanks for the interesting card, Catherine, your prize is on its way.

Meanwhile, to all the others, keep trying — it could be your turn next..

## Sorry, our mistakes

**Due to events beyond our control, the units of measurement were left off the performance graph on page 213 of February's modem group test. These should have been Kilo Bits Per Second (kbps).**

**● The number printed for Sony Peripherals in the Gadgets section of the January 1995 issue is incorrect. The correct number is 01932 816000.**

**● A few gremlins appeared in Eleanor Turton-Hill's laser printer feature last month which caused some confusion. Just to confirm, the Sharp JX9210 is a 600dpi laser printer — not 300dpi as stated in the box at the end of the feature.**

oops!

*Renowned for its success in the publishing sector, Apple will be pleased to hear that it came first in our Worst Christmas Card '95 competition. Designed by top European artists, its greeting featured an excited family setting up their brand new Performa, only to then sit and stare at their reflection in the screen…*